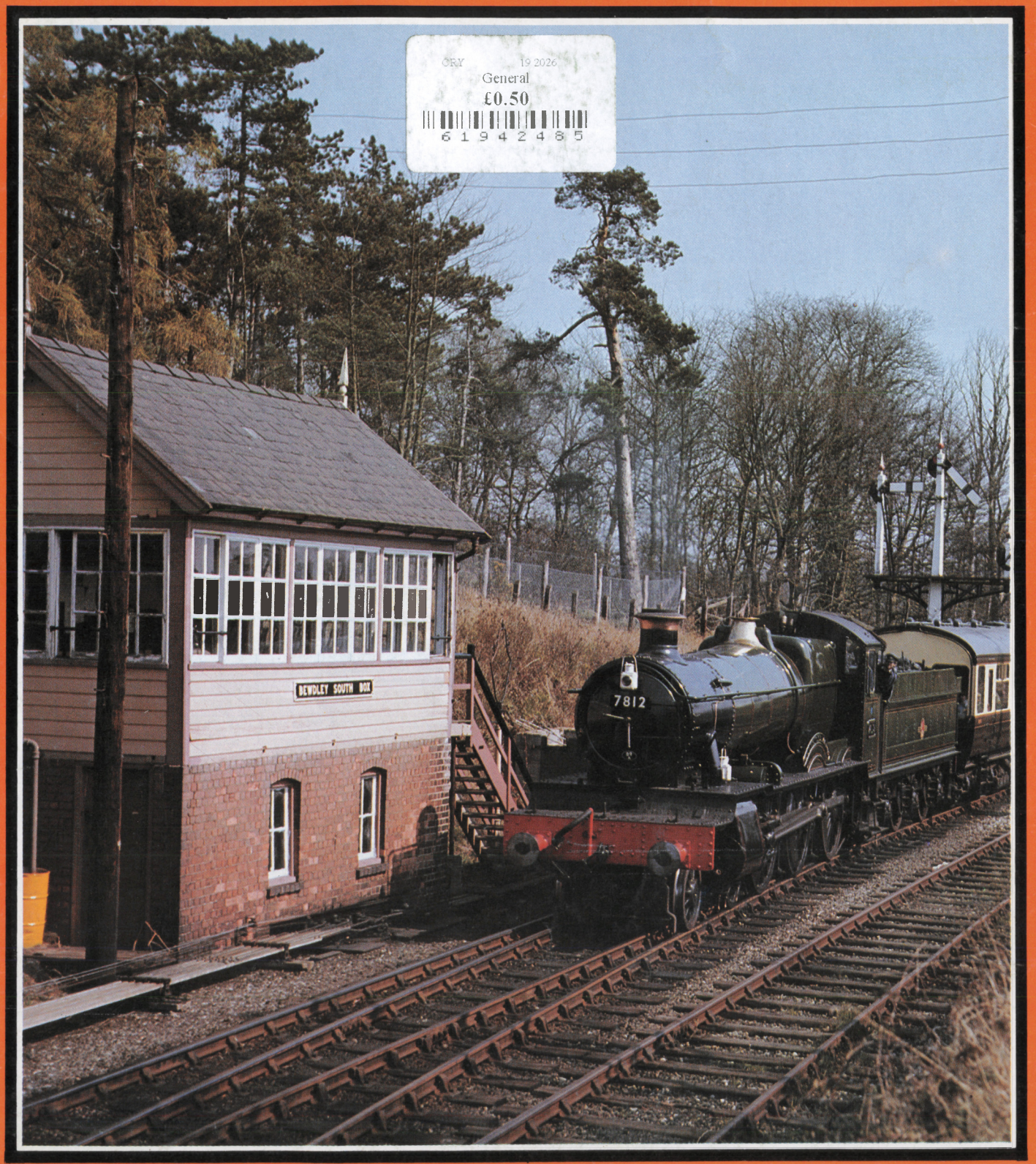
MODEL TRAINS

In this issue:

Severn Valley Railway layout
Layouts in the garden
B17 and Jinty conversions
Modernised mineral wagons
A look at Gauge 1
'Big Six' loco, tram layout
Tests, reviews, and much more!

August 1981 55p



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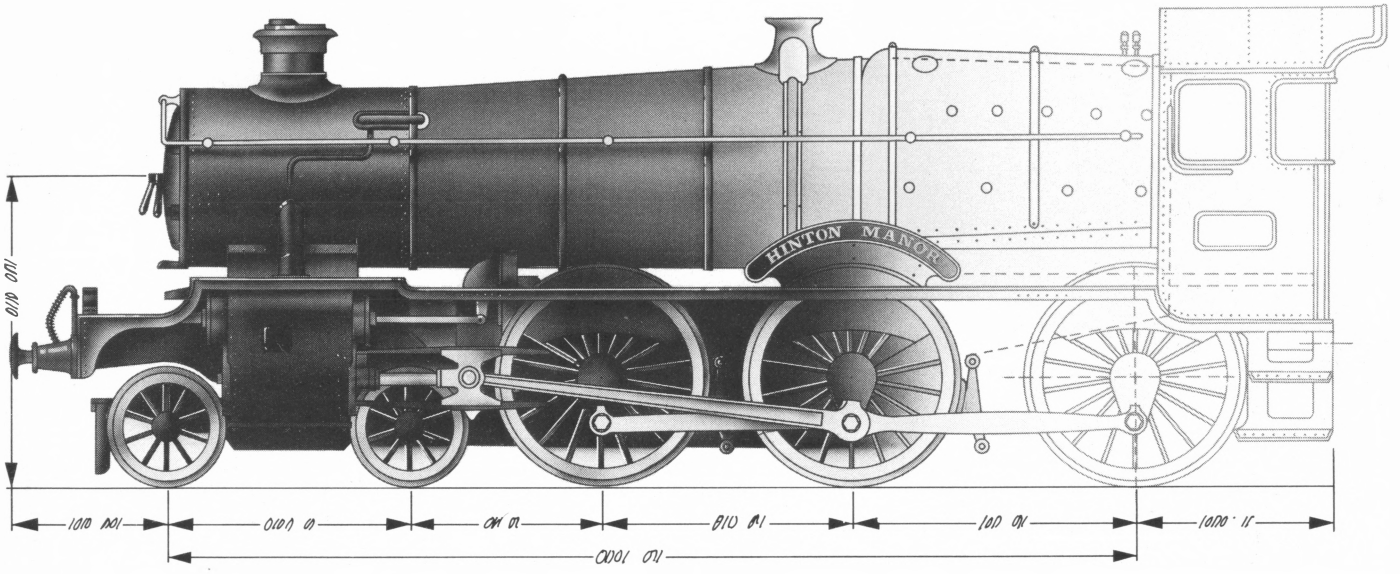

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MODEL TRAINS

AUGUST 1981

AIRFIX

VOLUME 2 NUMBER 8

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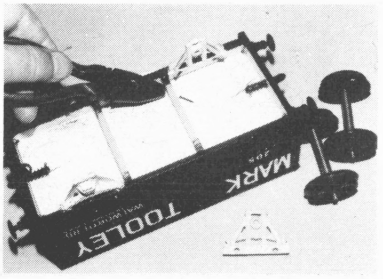

This month we take a look at gauge 1, one of the scales very suitable for garden layouts – which we also study. This is a Tenmille RCH coal wagon under construction. We found track pins made an acceptable substitute for small screws when it came to affixing the axle guards to the solebars, used in conjunction with Five Minute Epoxy. The axle guards shown are castings by Bonds. See page 433.

On the cover
The great days of GWR-style railway activity are recalled by the fine sight of the preserved 7812 Erlestoke Manor *and train passing Bewdley signal box on the Severn Valley Railway. This is a modern picture, but the scene has changed little from 30 years or more ago. Severn Valley Railway is the subject of this month's 'Basis for a Layout' (John Everitt photo).*

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YEAR OF THE LOCO

THE GREAT

In an age that bred super fast expresses and powerful goods engines it would be easy to overlook a humble shunter like the GNR Class J13 Saddle Tank locomotive.

But this magnificent little engine, which was designed by H. A. Ivatt and built by Sharp, Stewart & Co., outlived many of the more illustrious names of its era. For over 60 years the class did yeoman service, first dressed in the dark green livery of GNR, then robed in sombre slate black from 1923 when the GNR amalgamated with the LNER. And finally from 1948 it was garbed in BR's colours.

It served in large marshalling yards up and down the country. For instance, in 1935 there were 27 at Kings Cross, 41 at Hornsey, 20 at New England (Peterborough), 26 at Doncaster, 1 at Ardsley (Leeds), 1 at Copley Hill (Leeds), 5 at Bradford, 14 at Colwick and 2 at Grantham.

Today, only one J13 remains, preserved by Captain W.G. Smith who bought it from British Railways in 1959. Hornby's model is a replica of the lovingly restored engine which rests at the North York Moors Historical Trust. It carries the original number 1247 in red shadow gold lettering. (As an LNER J52 the original was 4247 and for British Railways it was 68846.)

Both front and rear windows of the cab are glazed and the interior is detailed to show pipe fittings, gauges and firebox as well as access to the coal box. Crew figures in working positions are supplied to place inside. In front of the cab red injectors have been separately fitted.

Five wire handrails, two each side, two on top of the saddletank and one curving around the front and brass safety valves give the well-cared for, polished look of the original. Vacuum pipes are also supplied. An X03 motor drives the front axle through a 28:1 reduction worm gear system which provides smooth acceleration and good control at slow speeds for shunting in your own yard.

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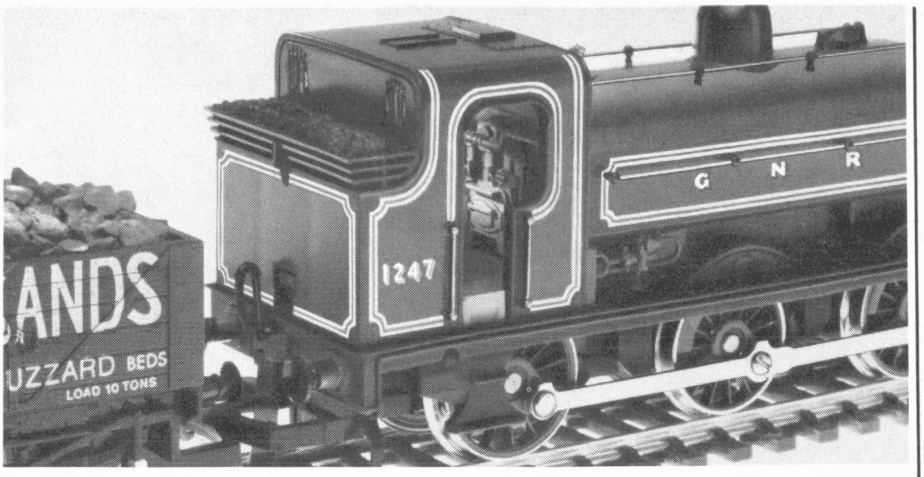

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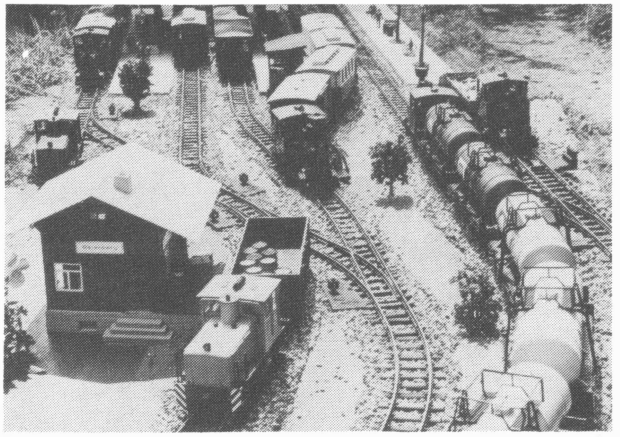

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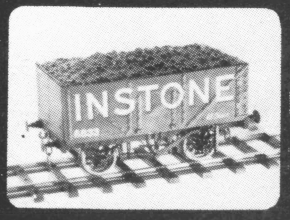

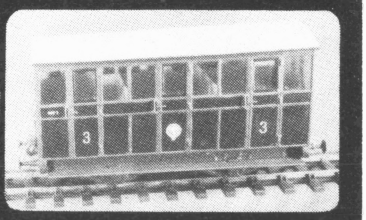

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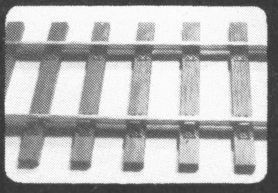

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Editor's desk

Space is extra tight this month, not because we have any less of it, but because we have packed in a great deal of material, covering not only our usual sort of subject, but also some articles on outdoor model railways and the larger scales suitable for outdoor use – LGB and gauge 1. Summer is, naturally, the time of year to think about venturing into the garden with model trains, and I hope that what we have here will give you some ideas. We could not get everything into one issue, but we will have a little further coverage next issue, when we'll look at Mamod models and offer some more LGB ideas. We've been trying gauge 1, too, but haven't ventured outdoors with it yet as the models look too good to subject to real weather! No doubt we'll get around to it, however. If you prefer to stick with 00 gauge outdoors, the experiences of Don Jones, a leading exponent of the art, should help you along.

Last month we featured the Grafar Class 47 in N gauge, and mentioned the Hornby 00 model in passing. It seemed too important to us to leave it like that, so Richard Gardner set to work on the Hornby model and his useful efforts will tell you how to rework the Hornby model next month. We'll have some concentration on N gauge, too, next month, with tips for starting and a simple but interesting layout project. On top of that a look at light railways and a visit to the Benguela Railway, plus an interesting 00 gauge layout and yet more of practical value. We'll meet you then. **Chris Ellis**

Exhibitions, Clubs and Societies

The Garden Railway Group was set up in 1980. Over the past few years, conversations with many interested people made it quite clear that such a group was needed.

It would seem to be the wish of the majority to meet every so often at existing garden railways and this requirement is beginning to take shape. It gives the chance for the modeller who has not yet started to see what can be done and also for everyone to chat about common problems, and not least, of course, for the families to meet. A first meeting was held last September when 40 attended, plus families.

Anyone else with a garden railway, or interested in starting one, is welcome to join our informal group. Please contact me (with SAE), Don Jones, 32 Douglas Road, Sutton Coldfield, West Midlands, B72 1NG.

Huddersfield Railway Modellers are holding an exhibition at the Town Hall, Ramsdan Street, Huddersfield, on Friday 25 Sept 6.30pm – 9.30pm; Saturday 26 Sept 10.00am – 8.00pm; Sunday 27 Sept 10.00am – 5.00pm. Adults 60p, Children 30p, OAPs 30p.

The Shaftesbury and Gillingham Railway Society will be holding an Exhibition in the Parish Centre, Gold Hill, Shaftesbury, Dorset, on the 25th July. Open from 10.30am – 6.30pm. Several layouts and trade stands will be present. Admission Adult 30p, Child 20p.

Wandsworth Weekend: An important attraction at Wandsworth Weekend, South London's biggest Show, will once again be the Model Marquee. The British Fairground Society, the British Model Soldier Society, the Carousel Doll Club and other societies and individuals will be exhibiting their scale models. Alongside the Model Marquee will be the Lullington Model Railway, with 13 trains running continuously on its 900ft of track. Wandsworth Weekend also features non-stop spectacular arena entertainment on Saturday 25 July from noon to 10.00pm, and on Sunday 26th from noon to 6.30pm. The Show takes place in King George's Park, off Garrett Lane, Wandsworth, SW18. Admission for adults is £1, and for under-17s and senior citizens it is free of charge.

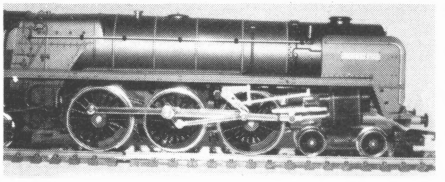
TEST TRACK

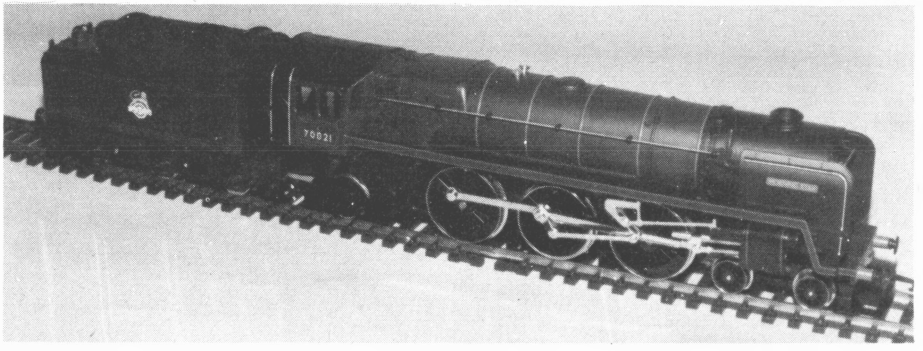
In this feature we take a closer look at the selected items which are tested and assessed by the editorial staff or contributors

Hornby: 'Britannia' Class 7, 4-6-2, 1:76 scale/00 gauge, UK £27.95

The 'Britannia' class loco in its various forms has always been one of the most popular in the Triang/Hornby range over the years. No surprise then that Hornby should produce a model for the current range which is virtually completely new, though we suspect that a few bits and pieces must survive from the earlier version. The model comes as 70021 *Morning Star* in early BR livery with the first type of BR totem. This leaves a blemish of sorts on the tender, for the tender moulding has a gap in the riveting and two moulded guide lines for the later BR style totem carried by a previous version of the model. Some slight rubbing down will correct this. Number panels, nameplates, and smokebox numbers for alternative engines are supplied, namely 70038 *Robin Hood*, 70034 *Thomas Hardy*, and 70028 *Royal Star*. In turn you may have to change a few details to finish the model as one of these later engines.

The model as supplied is representative of the first batch with low flat dome and





fluted side rods. These latter were applicable to the first 25 locos only, all the others having plain rods from new. Even the early locos, with a few exceptions, later had plain rods partly substituted from late 1951 onwards. On the model, however, the centre driving wheel has a small balance weight more like that on later machines. For an early loco it should be both deeper and longer by one spoke. Checked against drawings and photos, all other detail is correctly placed, though the extensive plumbing beneath the cab could do with re-working to make it more prominent, an easy enough job for the detail fan to do. Later locos had a deeper dome and the smoke deflectors were in many cases modified to eliminate the handrails. On the model these are moulded plastic in the old style, therefore making modification easy enough if you carve off the handrails first. Some small details are completely missing, notably in the valve gear area.

Dimensionally there are some slight liberties with wheelbase and spacings, presumably for production reasons. Thus the driver centres are 29mm instead of the scale 28mm, the front bogie wheelbase is 23mm instead of 25mm, and so on, but the overall effect looks right. The drivers are scale diameter but the bogie wheels are a little under size (and the cylinders slight too shallow) to give bogie swing on tight curves. The front steps are moulded as part of the bogie frame for the same reason. The tender appears to be about 2mm too long, but the wheelbase is correct and the excess may be accounted for by buffer length. The overall effect of the model is pleasing enough, but there is certainly scope for a bit of extra detailing and reworking. **Continued on page 414**

A clear view of one of Don Jones's Lima DMU sets emerging from the tunnel. Notice how the natural stones as one would find in a rockery, create the look of a craggy mountainous area. (Brian Monaghan).

00 gauge in the garden

Don Jones gives basic hints and tips for those who want to start outdoor layouts

Over the years I have read many articles in the model press which have given advice on how to achieve success in railway modelling, and sometimes I have been annoyed by the indications that the way mentioned is the only way. I have in that time promised myself that what ever happens, I would not imply that to anyone. Now I find myself in the shoes of my predecessors and realise how hard it is to say 'how to' without giving the wrong impression.

I would therefore like to state now that what is written here is based essentially on my own opinions and findings, founded on an intensive 17 years of 00 gauge in the garden, and obviously there must be many other ways of doing things which work just as well.

For the modeller thinking about using the garden as a 'baseboard', there will be a whole new set of problems to consider, and because of the relatively short time that the smaller gauges have been used outdoors, there is very little yet in print that the novice can turn to for advice.

I would like more time to prove some of my suspicions beyond any doubt but time is not now on my side, for so many people are in the process of building in the garden, that I feel it right that they, and maybe you, should at least have the knowledge of my findings before the basic expensive mistakes are repeated many times over.

First consider the challenges the garden will give:

(1) The chance not to compete but work with nature.
(2) The battle against the elements, sun, rain, wind, frost, snow.
(3) The battle against frogs, newts, slugs, mice, cats, birds, spiders and others.
(4) The general unknown!

Now consider some of the advantages:

(1) Limitless area to work in – by comparison with an indoor layout.
(2) The chance to keep the garden tidy and enjoy your hobby at the same time (conflicting problems when your layout is in the loft).
(3) Scale curves (indoor modellers can only dream of them).
(4) Full length trains.
(5) One extra room free in the house!

Now let's get down to basics. To keep

everything as simple as possible I've broken the key areas into subject headings which should tell you the essential information for getting started.

Track

Peco Streamline flexible track SL100X, with wooden sleepers, is well-proven and commended. The concrete sleeper track is inferior due to the chairs being small and therefore, under certain circumstances you may get problems. Other makes of track may well be as good or even better, but as yet insufficient evidence is available on them. Maybe the makers themselves will put forward evidence. Peco has one definite advantage in so much that it is readily available in most shops.

Turn-outs

Peco turn-outs work quite well outdoors. The small spring will eventually give up and rust away and the contacts on some of the older turn-outs will need to be bypassed by the track current. This can be achieved by a micro-switch attached to the tiebar.

Track joiners

Metal fishplates will suffice, though after three years they will begin to disintegrate, therefore a wire jumper lead will be required to bypass the fishplate. It would be advisable to use multistrand wire and solder it to the two pieces of track enabling the fishplate to be replaced at will. Possibly isolated fishplates might be an improvement on the system. These are plastic and should not weather away. Obviously a bypass jumper lead will be needed at each rail join.

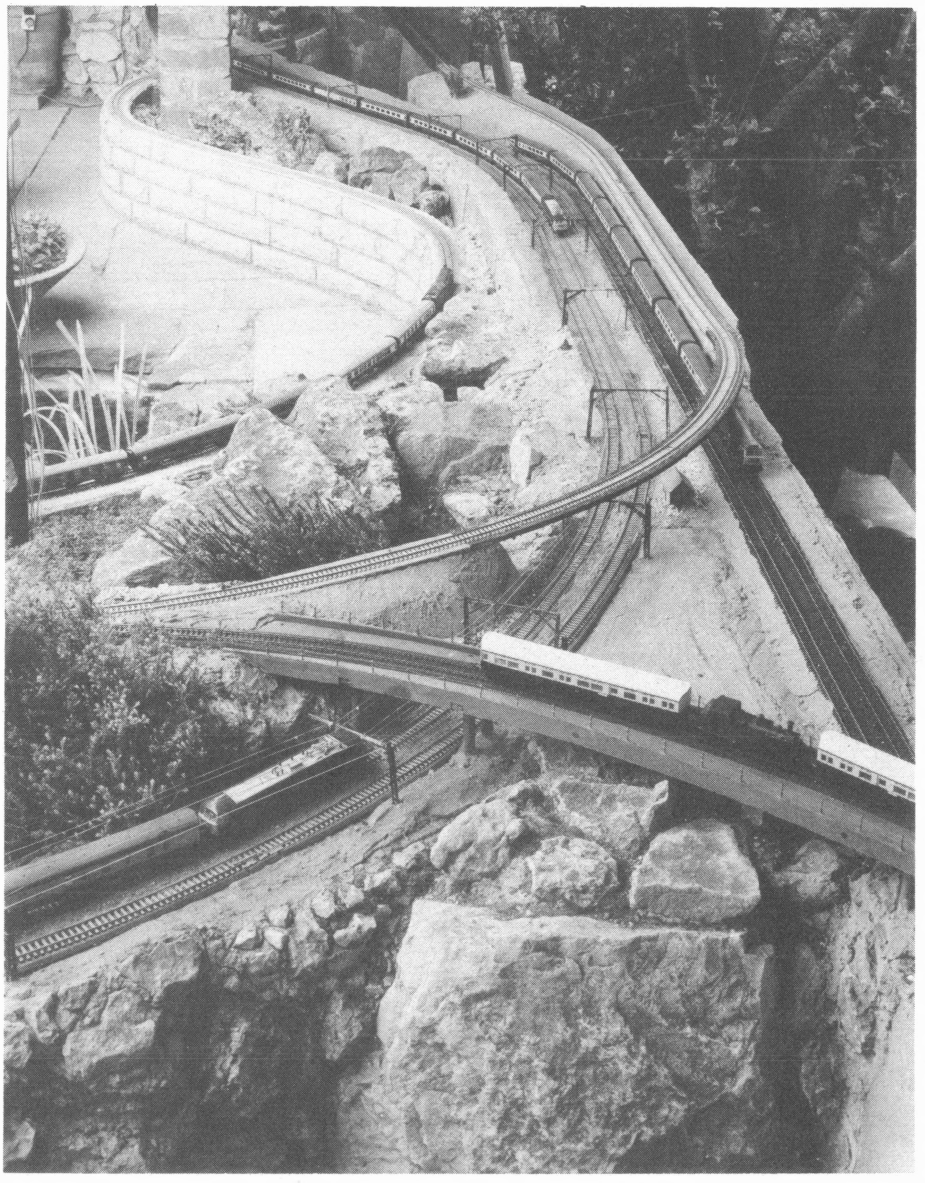
Method of laying

Temporary track can be pinned to ⅜inch ply or thicker. Suitably impregnate the wood with creosote or simply paint it, then fix the wood to a breeze block base with a masonry drill and screws. A more permanent base would be that of concrete with wooden blocks say every 3 ft.

Ballasting track

Of course there is no need to ballast the track, but for realism I believe you should attempt it. You can simply use Peco underlay and glue it to the concrete. This is very temporary as the track will soon part company with the underlay and in the course of some three years the underlay will disintegrate altogether. Permanent methods can be used. Sift fine grit over the track just as for an indoor layout then pour a mixture of Unibond and water all over. On a warm day ½hour is enough to give a permanent fixture, and if done corrctly, you will never remove the track again. Use 1 part Unibond to 2 parts water and a few drops washing-up liquid. Alternatively, pour very wet fine concrete between the sleepers, wet brush it into place, add some fine grit and Unibond, and once more, you have a most decidedly permanent track bed (wire brush the track when dry).

I must warn you at this point, care is the word. Do not rush it and a list is always a useful thing to have, for anything forgotten at this point of time will almost certainly stay forgotten.



The scale and diversity that can be achieved by a garden layout is amply demonstrated by this view of tracks and fly-overs. There are five trains moving on the layout here. (Brian Monaghan).

Basic track plans

It is advisable to make continuous runs wherever possible (A). Should end to end running be used then for one operator, logic would have it that both ends should be as near to one another as possible, say in a horse shoe pattern. Track example B will give end to end and continuous running also the chance to use turn-outs outside. These may be either hand or motor operated, and because of their close proximity to the shed, no great effort will be needed to work them.

Shed

It is essential that the shed be built lower than ground level, making steps down to it. Good drainage is necessary as a flooded shed will not help good running conditions! The main terminus and storage roads will, of course, be in the shed so that all stock can be held there when not in use. The control position would normally be in the shed too.

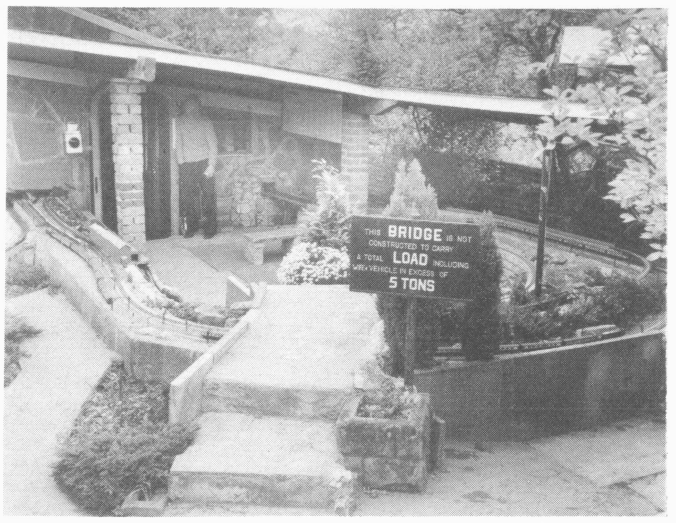
Tunnels

Most oval track systems will clash with the garden path for one reason or another. I find it easier and better for the track if the path goes over the track bed. One alternative is a removable section of track, but this is as convenient as the trap door is to an inside layout! For 00 gauge tunnels are best left short, 3½ft as maximum length. A quick way is to lay a plastic pipe in the ground, fit a board about ⅓ of its height and lay the tracks on the board. The under part can then be left empty or filled with gravel. The pathway can then be built over the pipe.

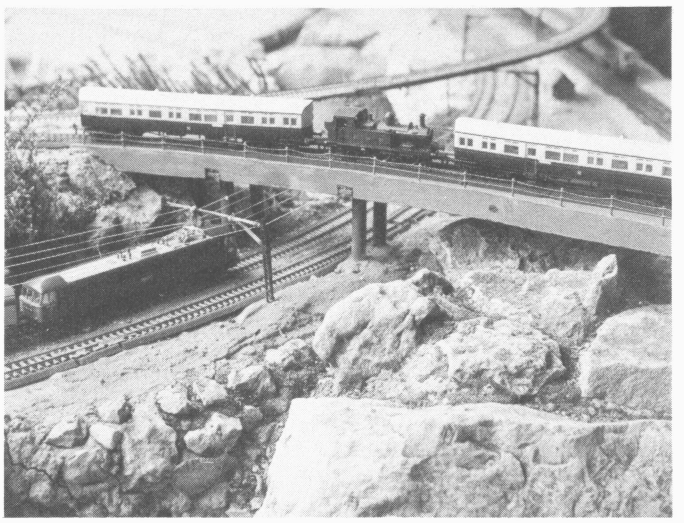
Make the board section removable. Should a major maintenance problem occur, all that is required is to unsolder the jumper leads from the track, push the fishplates back and you can remove the track board from the pipe so that detailed inspection can take place.

Things to avoid

Deep, long cuttings. These are the places where leaves will live, when not attached to trees!



The craftsman himself surveying his handiwork. Notice how the path goes over the track as suggested in this article. (Brian Monaghan).



A close-up of the 1400 class with auto-train going over the cutting. (Brian Monaghan).

Tracks passing under large trees. Bird droppings will eventually drive you mad. Should the tree be Cypressus, then the fall of dead wands will give endless trouble. The dry ground beneath Cypressus will also encourage ants, most undesirable creatures for the railway.

Flowering trees. Of course, during rain fall the tracks will get pounded by oversize rain drops. Avoid having flowering trees anywhere near, as a mixture of rain and blossom could easily change your mind about having a garden railway. All the above problems can be reduced by having covers over your railway track at the offending positions. But as yet I have not found the answer to the cobwebs at the tunnel mouth.

Power Supply from the house

A mains 15 amp underground cable will be the ideal set-up but if you are using this method, please get advice from a qualified electrician or better still, get him to put it in. Alternatively, overhead cabling will suffice but the same advice applies.

On no account use an extension lead laid over the lawn or pathway. I strongly advise that the connection at the house should be a plug and socket, and that this should be disconnected when not in use.

Current to track

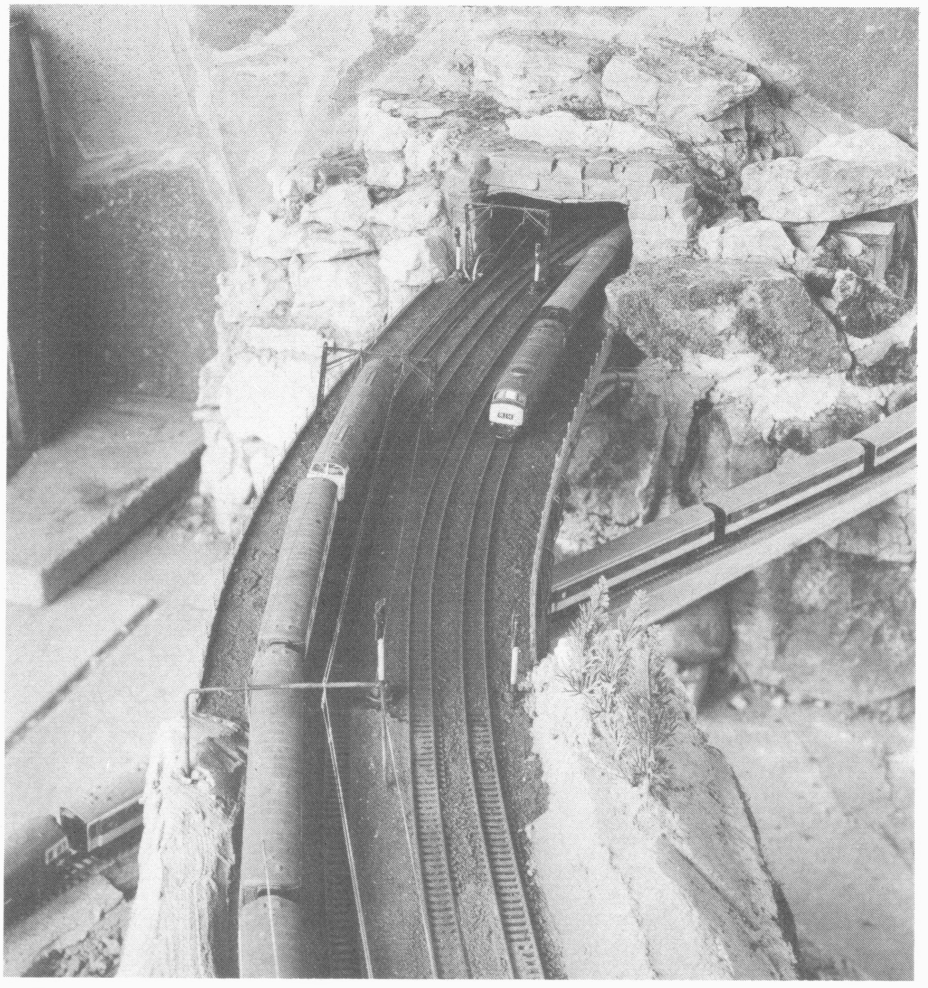
Voltage drop in the garden will not be too great a problem if the jumper lead system is used. However, with age voltage drop will occur and so the more feeds you have to the track, generally speaking, the better it will be.

Relco

For the garden this is a must. Relcos not only keep the track clean but the locos will remain in good working order. However, some of the published claims concerning Relcos (*not* by the manufacturers) must be completely ignored for the garden; 30-40 feet of straight track is maximum, less is much better. Damp is their great disadvantage; on a wet misty day they will become almost inoperative. However, they do warn you of bad running conditions. When the air is dry, all the orange lights will be on and you will be sure of good running. When the damp arrives, one by one the lights will go out and if you heed the warning, running of the layout should be stopped. Both locos and stock will suffer if used in damp conditions.

Sun

This is the most offensive of the elements, for it is the least predictable. Early morning and evening sun is of some benefit but the hot sun brings trouble. The beginner in the garden will do well to make notes of where the sun shines at its hottest each day and then check the position as the summer continues. He will quickly realise that maybe only a small patch of track takes the full heat while much of the remainder is in the shade. Expansion joints will be very necessary where the sun heats the track, but of no great significance in places where the track stays in the shade. Remember also that the sun will heat other parts at different times of the year.



A good view of the tunnel using bricks and covered over by rocks. Notice the concrete in the foreground as a basis for laying the track (Brian Monaghan).

Rain

This gives little trouble. You can run trains in the rain but of course common sense must tell you that it is advisable not to, due to damage to the stock. When laying track make sure you have good drainage. Avoid for example laying track on roofing felt or any waterproof material. This may stop damp rising but it will also prevent the water getting away from the track.

Frost

This is fairly evenly spread when it comes, so if the expansion joints are right and the track is laid firmly on to good concrete, no harm should befall the running track. However, frost does effect solder joints, so these will need checking in the spring.

The best way to keep frost problems to a minimum is to keep the ground dry. For only when water is in abundance can frost really do damage.

Snow

I place wooden covers over the track like clôches – very worthwhile. These keep most of the elements at bay, and when the snow comes, the trains run under the covers as if in a very long avalanche tunnel!

Some final points

(1) Make all parts of the track accessible.
(2) Make use of the vacuum cleaner on track. (Yes, you must vacuum your garden).
(3) Remember, mistakes in the garden are expensive mistakes, so think about everything first.

Stock

The inexperienced modeller would be forgiven for thinking that once the track is laid outside, any ready-to-run models will do for stock. This is not so if a reasonable standard of running is required. Here is a brief guide on what to expect from common models, based on my years of experience running 00 in the garden.

The great advantage of a garden layout is that real shrubs and flowers can actually be used very effectively, as can be seen in this photo (Brian Monaghan).

Airfix Class 31: Pick-up wheels have poor electrical conductivity when on anything but very clean track. The tyres are a disadvantage, for after some use, they will reduce the flanges of the wheels. Therefore though this is a good runner indoors it is not fond of outdoor conditions.

Airfix tender-drive steam locos: Generally these are at a disadvantage due to not being able to take enough extra weight in the right places, and the tender driven locos suffer the worst. Tyres once again will give problems.

Lima diesels and DMU: Excellent both inside and outside, but they also suffer from poor conductivity on anything but clean track.

Hornby HST, Class 86, 47, 37, 25: All have poor performances from motors.

Hornby DMU and E3001: These both give excellent performances, ideal for the garden, with good electrical pick-up, even on quite dirty track. The motor in my opinion is yet to be bettered in the garden. The trailing bogies however are poor and will need to be replaced by Lima ones for optimum tracking.

MTK: All loco bodies and frames are good due to the weight which is distributed correctly. The motor bogies give unnecessary problems.

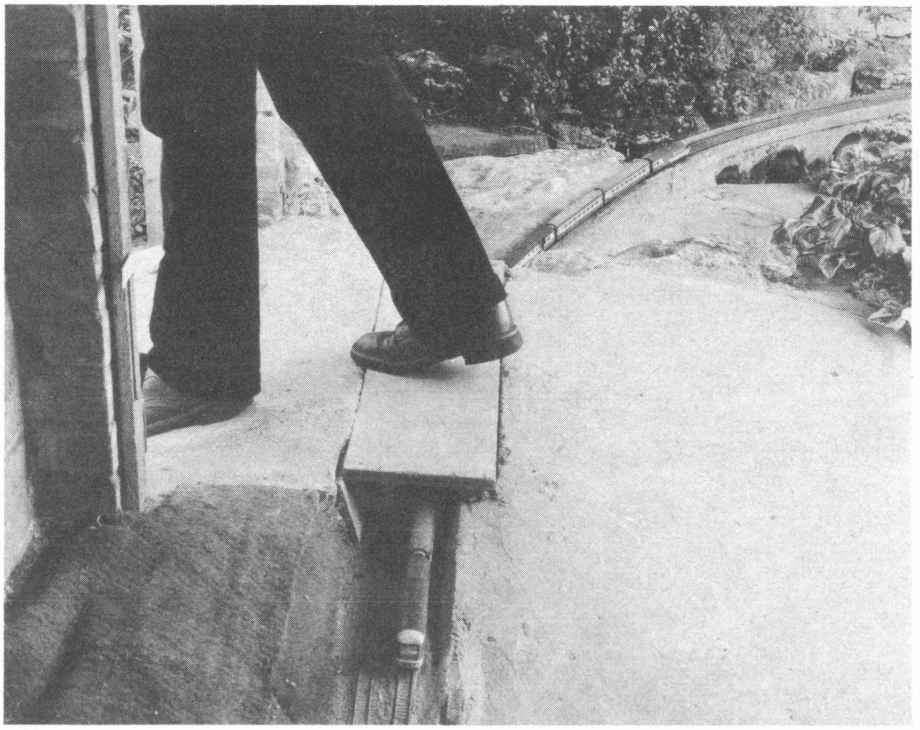
Mainline Peak: The reduced flanges on the wheels are a distinct disadvantage and the rubber tyres give endless problems.

Mainline Scot/Jubilee: Excellent. No tyres! And a motor giving a correct weight position. Any loco of any make with this combination has an excellent chance of success in the garden.

Jouef Class 40: This loco suffers with the same problems as those of the Peak.

As will be evident from the above, my own layout is firmly set in the current era.

Coaching stock is as widely diverse in performance as locomotives. Of all current era coach models the Airfix Inter-city MkII is supreme and cannot be faulted as a runner on garden tracks. Not so the Airfix 57ft and 60ft coaches, however. They rock like mad and need attention or should be avoided. All Lima stock runs excellently in the garden. The Jouef MkIII coach runs nearly as well as Lima, though a little weight added under each bogie offers a big improvement as the model is



A clear indication of the size of the layout is provided by this picture of Don Jones's foot! (Brian Monaghan).

very light. Hornby coaches are poor road holders in outdoor conditions.

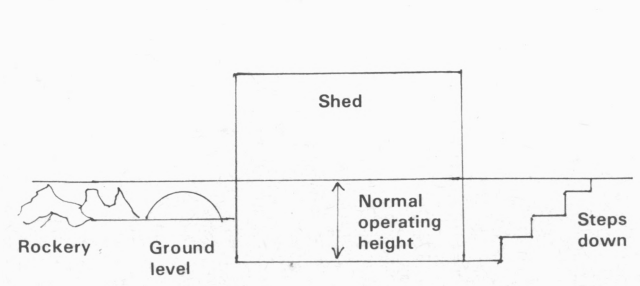
You may find a certain amount of experimentation necessary before settling on locos and stock which give of their best on your particular layout. For example on one 20 yard circuit of my layout a Lima DMU will only just make it back to the shed before build up of dirt gives electrical pick-up trouble which the Relcos will cure as the model runs through the shed. I use Lima diesels straight from the box, but on other models I have fitted old Triang-Hornby X3121 wheels which cope admirably with the dirt. On others I have put Lima motors and/or bogies into favourite models. For example my Hornby Class 86 has the motor bogie from the Lima Class 33 replacing the Hornby power bogie. On some Hornby coaches like sleeping cars I have fitted Airfix MkII coach bogies to make them into good runners.

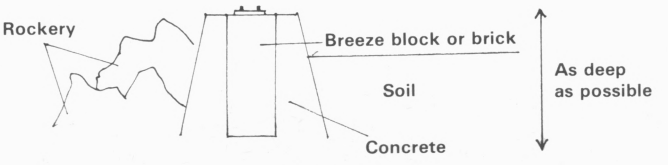
Couplings

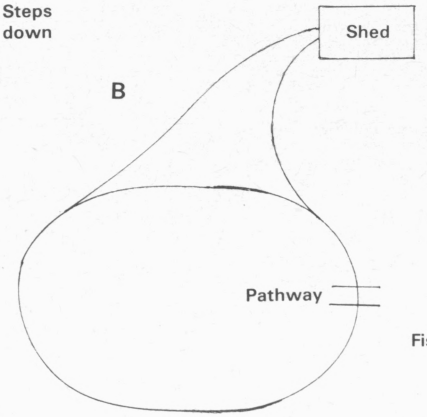
The best I have found is the original Airfix small centre sprung coupling, and these in a complete rake can give near perfect performances. Not so its bigger brother with the roll bar, common to most makes. Forward they act quite well, but when in reverse, friction on the bar usually results in unnecessary derailments. This is more pronounced in rakes of over 8 vehicles. Likewise trains of 12 Airfix coaches with small couplings when propelled either forward or backwards are faultless. Take the same coaches and use the larger coupling. When propelled backwards at fast speeds they can give trouble.

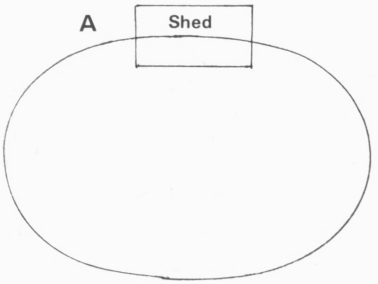
This is one of the wooden covers that Don Jones commends for covering track in order to keep leaves and snow, etc, off the track (Brian Monaghan).

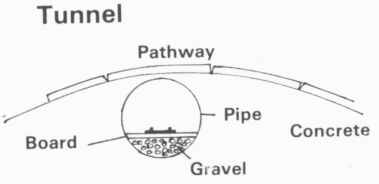
Diagrams illustrate the particular points mentioned in text

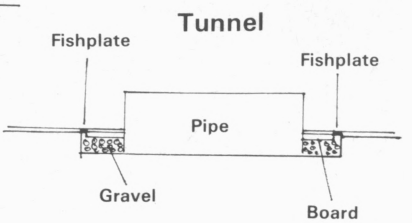












Narrow Gauge in the Great Outdoors

Bert Lamkin started with LGB using the simplest constructional techniques.

Most model railway enthusiasts sooner or later feel the need for more space and one place where this is available in fair abundance is usually in the garden. The average garden presents quite a challenge as a site for a model or miniature railway and the ultimate result can be very rewarding. All scales from 2mm upwards *can* be used in the garden (and have been) but needless to say the approach will vary with size. For the smaller scales an elevated base is possibly the best for ease of operation. The fact that nature cannot be scaled down is a major consideration. However, the larger sizes of 0 and 1 gauge can be installed at ground level and use any of the garden features to enhance their setting.

Whatever size is adopted a careful survey is essential to avoid wasted effort, so in common with indoor layouts, a plan should be made showing all the details of route and construction. Another factor in the planning stage is whether the proposed line is to be standard or narrow gauge – the latter allows for sharper curves and possibly a simpler approach.

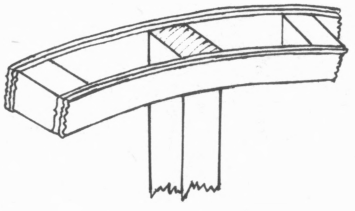
Naturally a major problem on moving outdoors is the weather, so a certain amount of robustness needs to be incorporated into the design especially in the support structure so that all the timber used should be well creosoted or painted. Luckily modern plastics are reasonably immune to the average British weather and plastic sleepered track seems to be quite satisfactory.

LGB is ideal in scale and size for garden lines as this photo shows. Everybody is getting into the picture, just like Victorian times. This is 0-4-2T Eva *with a train of LGB coaches. Track is laid as shown in this article.*

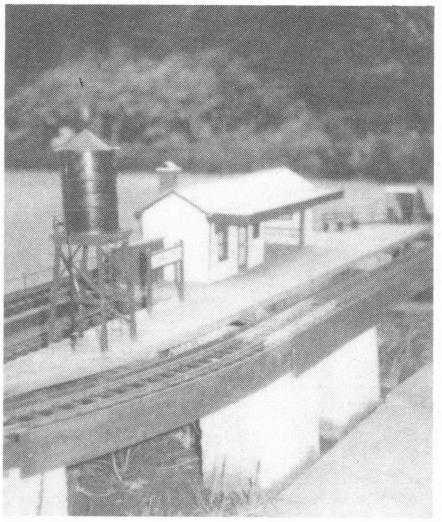
If it is intended to use electric traction, good electrical conductivity is essential, all rail joins must be bonded and with the longer run envisaged, feeder cables should be installed to maintain the voltage. Resistance appears much quicker outside so time spent here will save a lot of frustration later. Also at the planning stage, temperature fluctuations and accessibility should be considered, as quite a bit of expansion can take place in hot sunlight.

My own current experience dates back some ten years or so when the coming of LGB tempted me to try a garden line as a summer diversion from my large GWR 00 layout in the loft. The methods I've used are not necessarily original, but they work and are robust and simple.

To start with you'll have to carry track above ground level, either in places or all round the garden. There are various methods for elevated track, but one idea is included here, (see sketch 1). Basically the track is carried on a series of posts driven into the ground to the required height, (single and double line supports are shown in the illustration). At stations and junctions requiring wider bases, extra posts will be needed. Other points to remember are: make sure the structure is firm and well protected against weather so that pools of water cannot collect. Drainage is essential on all types of outdoor railways.



Sketch 1: *Wood supports for the track bed with laminated sides (hardboard strips) for curves. Track bed laid on top. All well creosoted.*



Lowater station, complete with small wooden seat, platelayer's hut and nameboard. Structures are thick plastic card. Locos use the spur between the tracks when watering. Although only 9 inches above ground operation is not too difficult. Water tank is from an old tin and it really works! Note concrete supports for track bed, as shown in sketch 3.

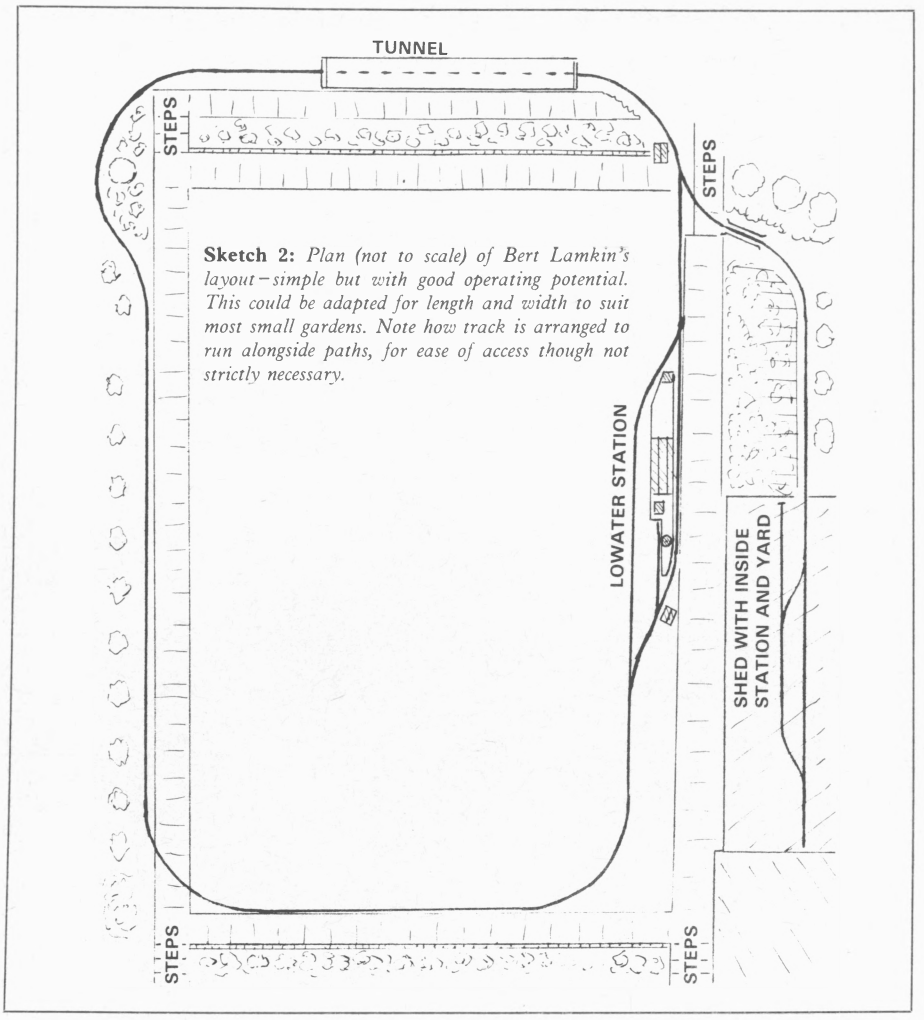
Getting general domestic approval for a garden railway is very important. If all concerned agree, then it is possible to create an attractive setting – using smaller types of plant adjacent to the line if you are at ground level, or suitable shrubs to hide the underpinning on the elevated layout.

Before World War 2, I had an outdoor gauge 0 line for a short period, but when LGB came along the passage of time meant I was almost a beginner again as far as outdoor lines go. The scale of LGB is roughly ½ in to the foot and it is based mainly on Austrian or German narrow gauge lines, so the stock is not quite so dwarfed by nature and it is a lot easier to construct associated items.

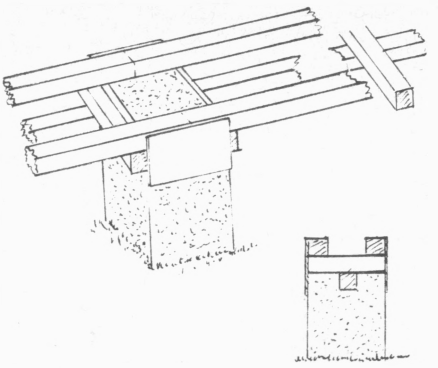
The present layout is shown in sketch 2 and although all railways should strictly go from A to B the inclusion of a continuous run was difficult to resist – on those warm afternoons when one is particularly lazy, one just sits back and relaxes and watches the train go by. So in this case I can have A to B running when required and use the run-round loop at the station to provide the continuous circuit. Incidentally this is some 120 feet to the lap.

The track

Because the garden is at several levels some of the track is directly on the ground with other parts including the station about nine inches above ground. There are various ways of laying outdoor track, the main objective being that it should be firm and without severe gradients. My track is nearly all LGB, brass with plastic sleepers in sections; the curves are approximately 4 foot radius. There is a short section with aluminium rail



Sketch 2: *Plan (not to scale) of Bert Lamkin's layout – simple but with good operating potential. This could be adapted for length and width to suit most small gardens. Note how track is arranged to run alongside paths, for ease of access though not strictly necessary.*



Sketch 3: *Bridging supports for track, using concrete block and 1 × 1 inch timber as described.* **Foot of page:** Eva *and train on the line from the inside terminus.*

to the same cross section, a type previously obtainable from Beatties. A test piece of this was left in the weather for six months to prove its suitability. The aluminium rail was painted before laying.

For the ground level section I buried a length of well-creosoted 4 x 2 inch timber with the four inch face level with the surface. The track was laid directly upon this with a few screws through the sleepers to steady it, this being done only after the creosote was thoroughly dry – it doesn't like plastic. A corrugated PVC sheet was then cut into six inch strips and driven into the ground parallel to the track, each side about one inch from the end of the sleeper, leaving approximately an inch showing above the ground. Ballast in the form of ¼ inch granite chips, from the local builder's yard, was spread across the track between the two plastic 'walls' and it was left loose, retained by the PVC sheet. For the elevated sections, concrete blocks (18 x 9 x 4 inches) were cut in half and 'planted' with the cut side down, at 3½ foot intervals, being slightly closer to one another on the curves. These were levelled as work progressed.

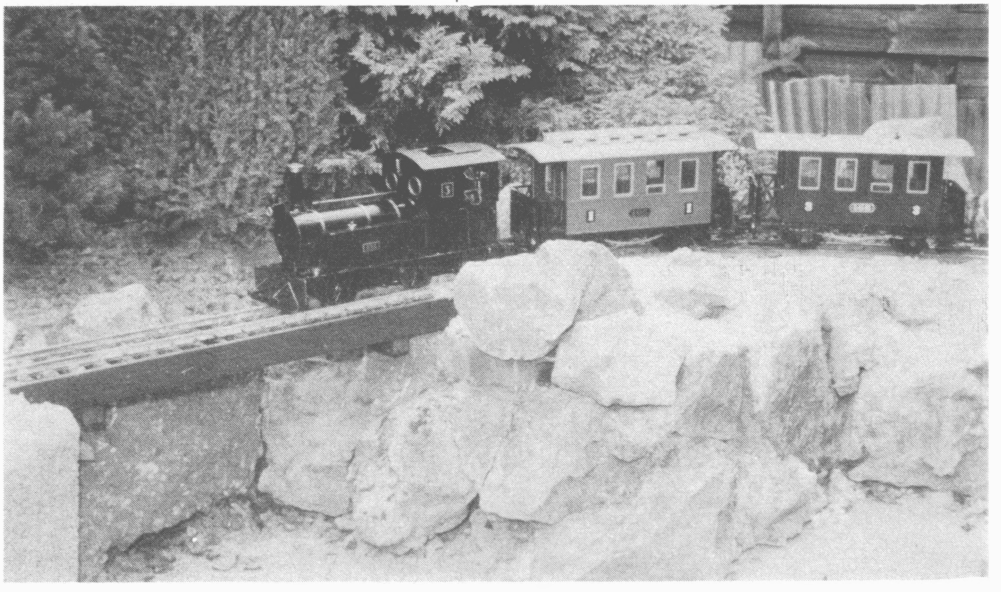
Sketch 3 illustrates the bridging that actually supports the track; 1 x 1 inch timber was used and well-creosoted before installation. This is of course for the straight sections. For the curves, I virtually let the track form its own support, which was done by screwing short lengths of 1 x 1 inch under each fourth sleeper, the ends being flush with the ends of the sleepers. Strips of hardboard 3 inch wide were then glued and screwed to the 1 x 1, as the strips prevent the rail sagging and do not protrude vertically enough to obstruct the rolling stock. The curved sections are approximately three feet long and the joins rest on a block. Sketch 4 shows the idea. Waterproof ply would possibly be better for the strips but I happened to have the hardboard to hand. Weather protection is by creosote and paint, but I should mention here that Cuprinol which comes in several colours, would do just as well.

At each block a small 'plate' of hardboard or ply is extended downwards on both sides to locate the track. Although I originally bonded the rail joins for two-rail electric running, the aluminium sections gave trouble, so now I use steam and self-contained electrics for motive power. The layout is now in its fifth year since completion in its present form and apart from a small amount of realignment and the replacement of washed away ballast it has stayed put quite satisfactorily.

Another feature of my layout which is very important, is the tunnel; besides giving a visual break, a necessary feature on model railways, it also provides protection from debris and leaves where the line passes close to a Hawthorn tree. The sides are constructed from concrete blocks, with cast concrete portals, and the roof is PVC sheeting which is detachable for maintenance, etc. If the line is inactive for long periods of time the tunnel should be closed as certain garden inhabitants could regard it as a desirable residence!

The station

This comprises a waiting room along with office accommodation, a water tower, access stairway and a signal box. The platform is ½ inch plywood mounted on cross battens between the two tracks. The water tower is a domestic tin fitted with a small tap and a length of rubber pipe. A detachable conical lid allows for filling with water – on this line it is definitely functional – the tank being supported by a strip wood tower with a small ladder attached. On the platform there is a small funnel for the surplus water to drain away.



The buildings are 1/16 inch plastic card reinforced internally with balsa wood, and painted inside and out. The signal box has a drop back for access to the small levers operating the turn-outs, and so far they have stood up to the weather without any sign of deterioration. It may surprise you to find that the structure is essentially plastic card – but I can assure you it is perfectly sound for outdoor use so long as it is thick, well braced, and well painted. All buildings are located on their bases by small wooden blocks so they can be lifted off if required for cleaning, repainting, or repair – work which can then be done indoors.

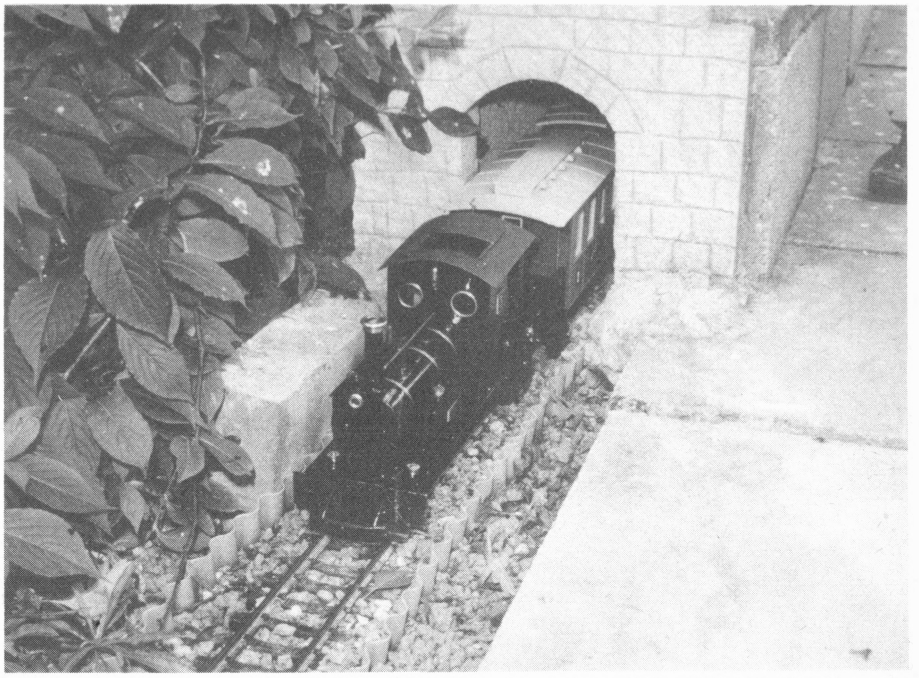
To avoid taking the stock back and forth from the garden I decided to have the terminus in the garden shed/workshop where, as the floor of this is well above ground, access by rail presented little problem. The entry through the end wall is closed by outer and inner drop flaps, with the track fastened directly to the floor consisting of a run round loop and a siding, at present without the normal station facilities, though this is planned for future work. The area is screened to protect it from sawdust, etc. when the workshop is in use.

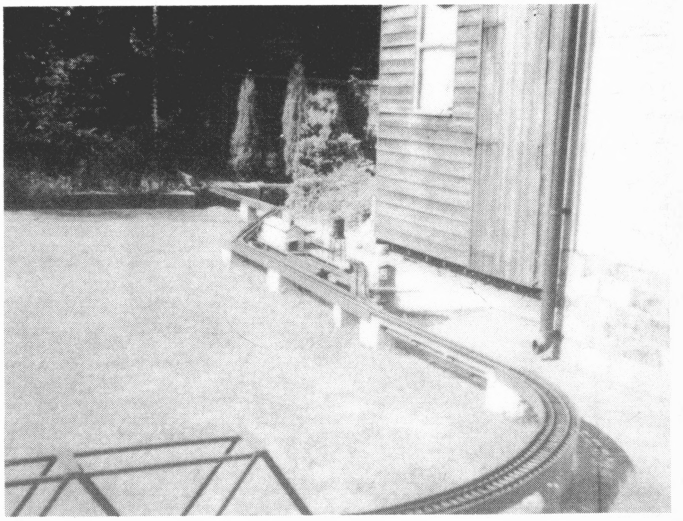
The stock

Although perhaps lacking the quaintness associated with British narrow gauge lines, I have kept to the LGB rolling stock, because it is excellently detailed and very robust. The fact that it is not of British prototype doesn't matter in a freelance set up. One of the flat trucks has been converted into a van with a driving compartment at one end, to house the small accumulators for the electric loco and is more or less permanently coupled to it, with the controlling rheostat knob protruding from the plain end of the van next to the loco. One can thus drive the train either way, and although this unit is quite heavy the outfit runs very satisfactorily. The only drawback is that it does not sound like the steam loco it is supposed to be. In an effort to overcome this I enlisted the services of my nephew, who is rather electronically orientated, the idea being to produce what is known as a 'white sound' device that would be modulated by the action of the loco. This was duly installed in the battery van and a small loudspeaker mounted in the cab. Unfortunately, although the device works, it is not really loud enough, twelve volts only being available, but we *have* tried.

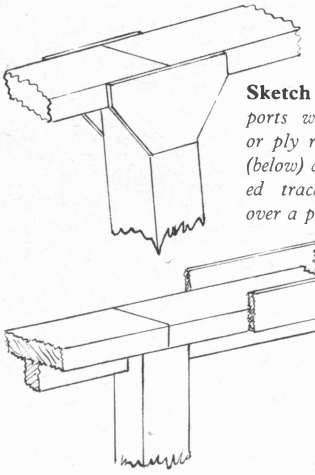
The other locos are steam. Both are tanks, one of which is an 0-4-0 spirit fired job, the other an 0-4-2 is butane gas fired. They perform very well regardless of the weather and of course sound and smell like miniature locomotives. Naturally this arrangement does not give the degree of control normal to an electric set up and one has to be physically, the engine driver. Nevertheless, it is very satisfying and a lot of fun and as I said previously one can simply set the regulator and sit back and watch. These remarks now want qualifying because radio control has been successfully used on small steam locos. Maybe that is the way we shall all do it in future. Certainly, with modern techniques applied to locomotives and rolling stock a warm dry day is no longer necessary in order to play trains in the great outdoors.

The pictures and sketches should show the idea. Certainly my simple technique for track laying has stood the test of time and should work well for you, too, if you go for LGB or gauge 1. If you want electric traction, bonding all rail joins with wire jumpers is almost certainly an essential requirement. The aluminium track used on some sections of my layout (no longer sold, but nice and cheap in its day) proved a weak area when my layout was electric only using standard LGB locos. Over the years I graduated to steam only, but I would commend rigid adherence to LGB brass track if you plan electric traction. Above all don't rush a garden layout project. It took me about five summers of sporadic work to complete my layout.





Above: *The tunnel mouth with masonry scribed in while the concrete was setting. Here you can see the PVC strips which form both a low fence and act as a retainer for the loose ballast.* **Right:** *The station at Lowater with the garden shed beyond it in which the terminus and storage roads are housed. Note use of dwarf trees flanking the track in the background and girder bridge in foreground.*



Sketch 4: *Wood supports with hardboard or ply retaining strips (below) and a reinforced track board join over a post (above).*

Below: *This gives some idea of the layout. The junction for the terminus is in the distance. Note the bridge across the path which is arranged to lift out when the layout is not in use.*

Let's go Live Steam!

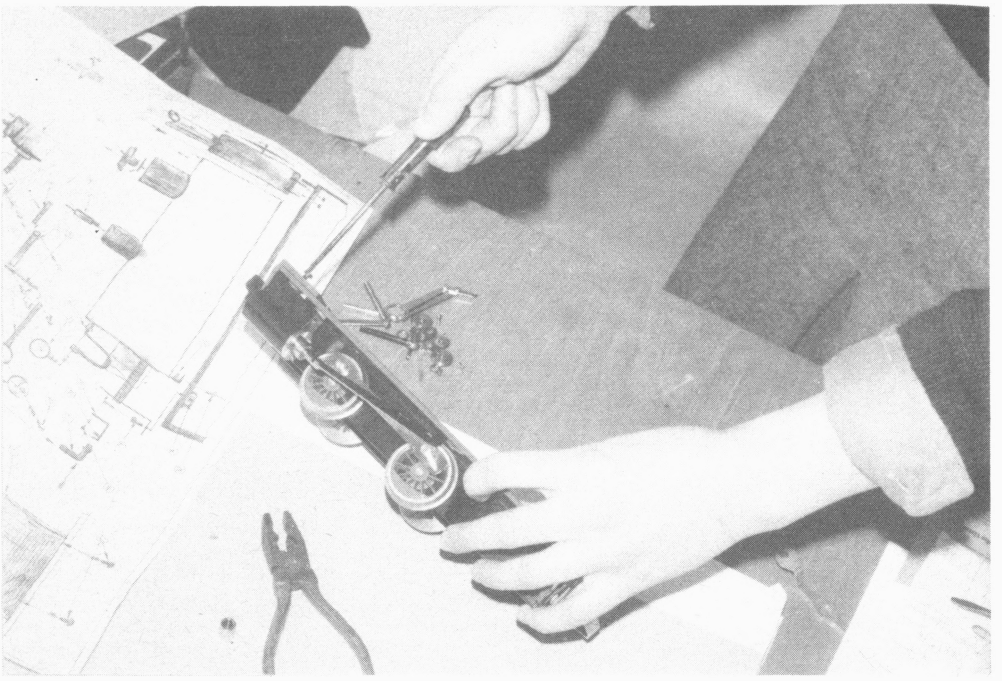
How to make an easy start with a reliable engine

The ultimate experience in railway modelling, is perhaps, live steam traction, closely simulating the real thing. In Britain a champion of the cause is the energetic Tom Cooper, whose Merlin Models, 3A Banwy Estate, Llanfair Caereinion, Powys, is not only firmly established in the appropriate area for narrow gauge activity, but is entirely devoted to the proposition of live steam locomotives running on gauge 1 or gauge 0 track and reproducing all the charm and character of narrow gauge steam.

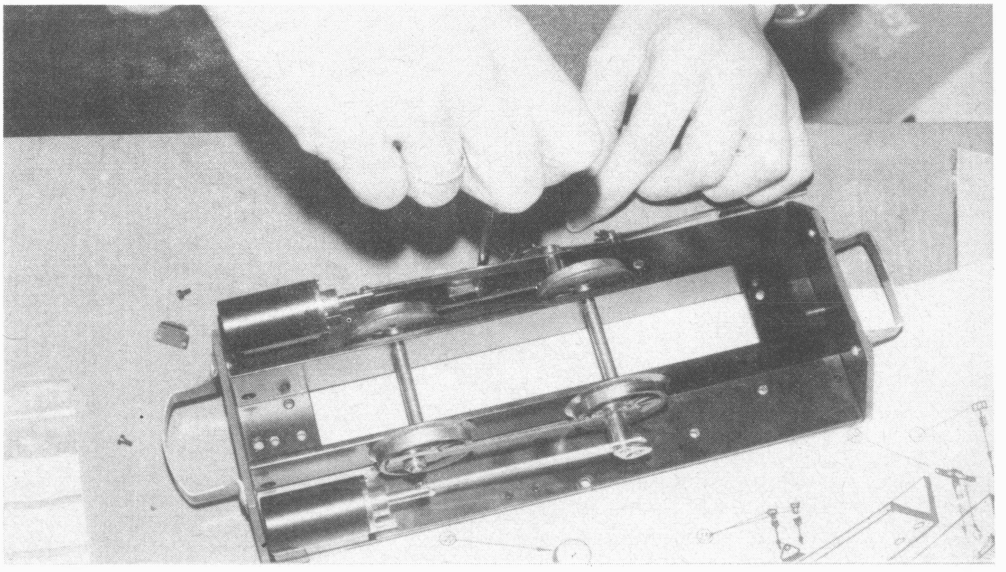
Live steam is not without its problems. Outdoor running is subject to the hazards of weather and nature, the scale is still relatively small for an outdoor setting, and in smaller scales reliable steam power was not always to be taken for granted. However, in West Germany the firm of Beck recently produced some German prototype models to run live steam on LGB track, and Tom Cooper was impressed with the Beck boiler which is internally gas fired so that the all important heat source (the 'firebox') is fully shielded from rain and wind, the bane of the older spirit-fired live steamers. As a result the Merlin Models range was born, adapting this well-proven and virtually foolproof Beck boiler to Tom Cooper's own ideas, and giving the modeller some very British-looking designs into the bargain.

Tom Cooper demonstrated the various models to us and we were suitably impressed. Later when we queried how easy were they to build he invited us to try one for ourselves. As a result a large box containing about 70 bags of parts, all neatly numbered, was delivered to the *Model Trains* offices and off we went. Tom Cooper said we should finish it in a week-end, armed only with a screw-driver. We timed it, and with a useful small spanner as well, we made it in seven hours from opening the box to first firing it up for a trial run, spread over three actual sessions.

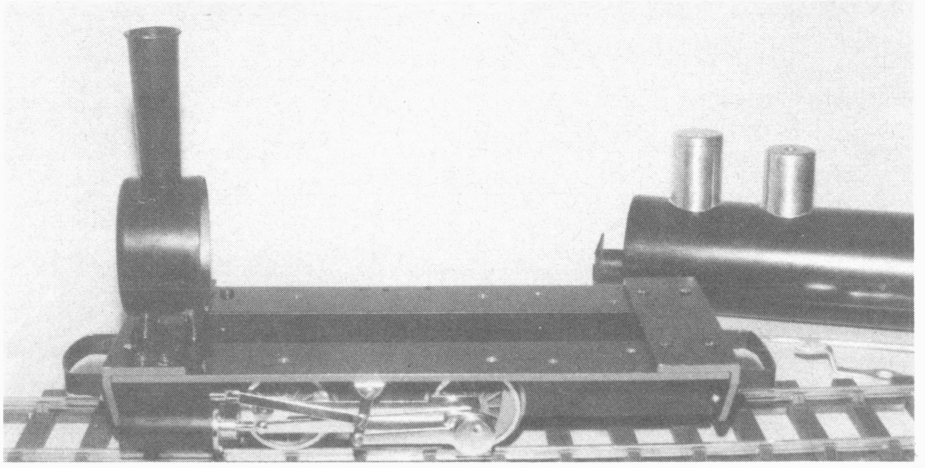
The pictures show how it progressed, and the complexity of the instruction sheet drawings (on first sight anyway) and all the bits and bobs did not initially encourage us to believe we would actually get it running. It proved to be delightfully easy, however, thanks to the precision of the machining and the neat segregation of the parts for each stage of construction. We found that two heads were better than one when it came to assembling the valve gear as the exact arrangement took a little working out. A complete beginner can do it easily though.

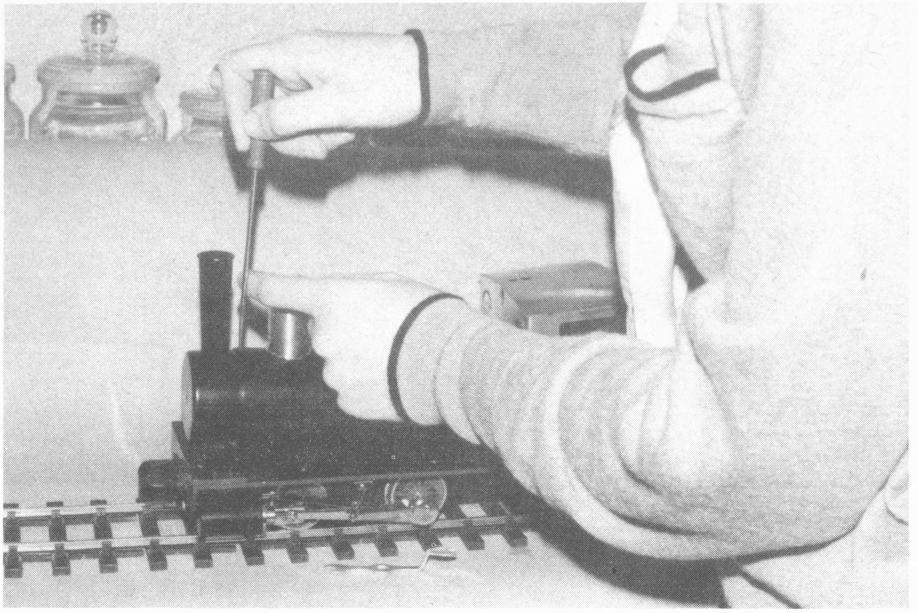


Above: *Model comes with wheels, axles, and main frames ready assembled. First task is to identify the cylinders, side rods, and valve gear. Here we have attached coupling and connecting rods and the cylinders are being screwed in place – everything screws together.*

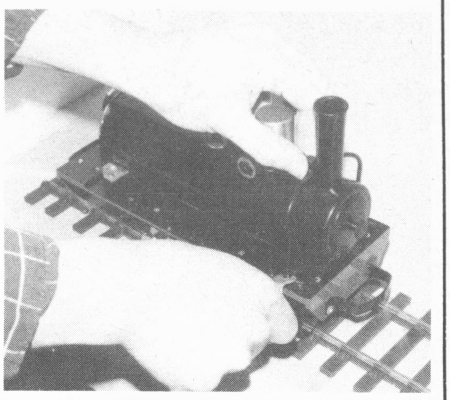


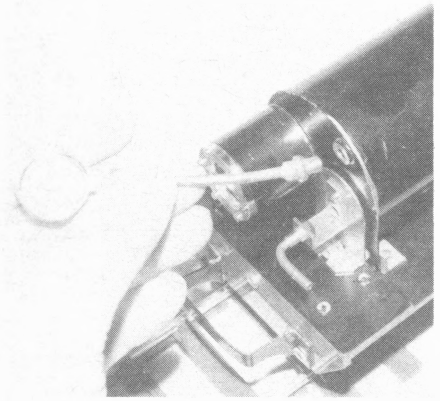
Above: *Valve gear assembly is straightforward, but a 'dry run' and close attention to the instruction sheet is necessary to identify the parts. Here the brackets are being screwed to the footplate.* **Below:** *With valve gear assembled, the complete chassis can be railed and if all is well it will run free when pushed along – with some pressure felt in the cylinders. Next addition is the smokebox, shown screwed to the footplate.*

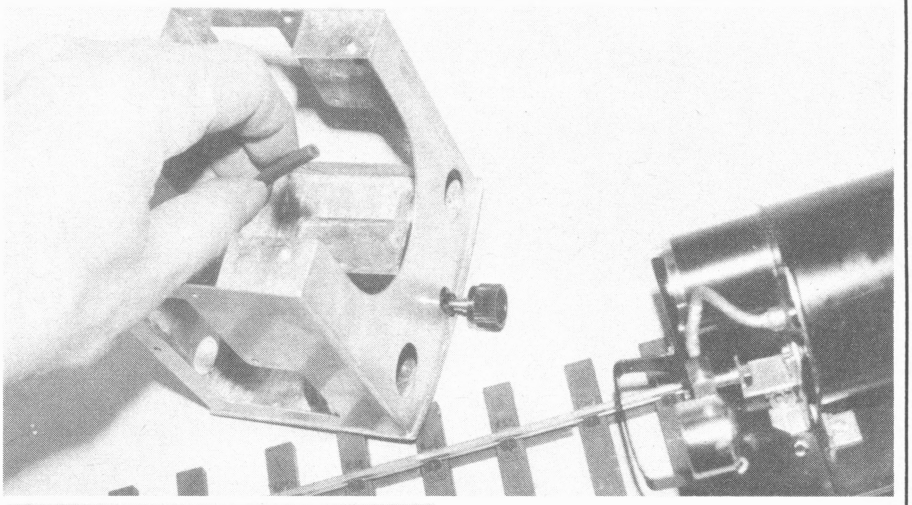




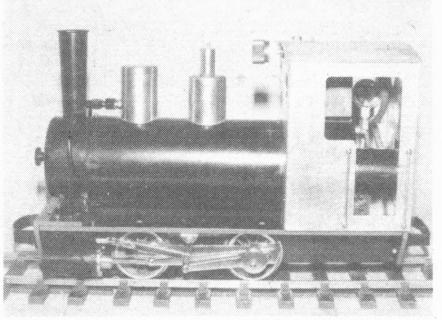
Left: *The boiler overlaps the smokebox, is secured by a single screw, and screws to the footplate at the rear end.* **Below:** *Steam pipe assembly is ready formed and bolts into place between dome and cylinders. It is essential to screw all nuts really tight to prevent steam leaks.*

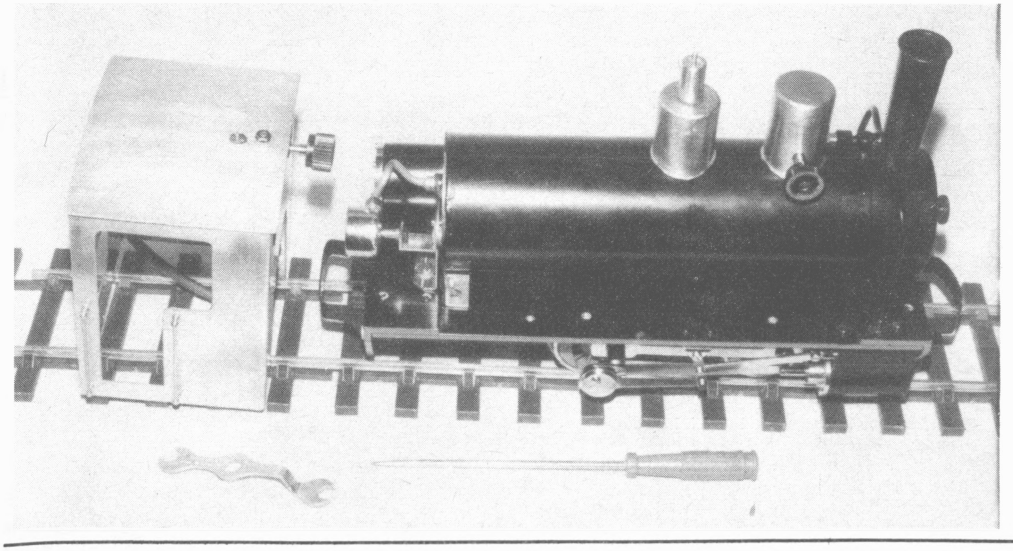






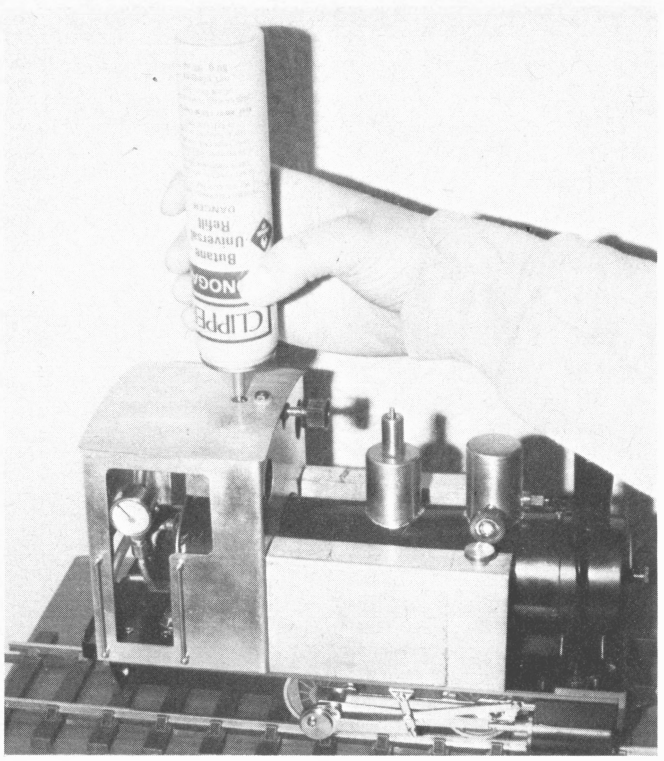
Above: *This is the firebox end. The 'firebox' is actually a tubular gas burner which fits into a tunnel in the underside of the boiler and here can be seen screwed into place alongside the water gauge. We are screwing in the pressure gauge, the tube of which must be bent carefully by hand (or pliers) to put the dial in a suitable viewing position.* **Above right:** *The cab comes ready fabricated. The gas tank is screwed into the cab roof and the gas control knob fits into it through the spectacle plate. The rubber tube we are holding is fitted over the pipe to the gas burner, seen in the photo above left.* **Below:** *Cab ready to be screwed to the foot-plate. Note pressure gauge installed. Meccano spanner (or similar) is useful for tightening the nuts. On the dome side can be seen the regulator which controls steam flow to the cylinders and hence speed of the loco.*

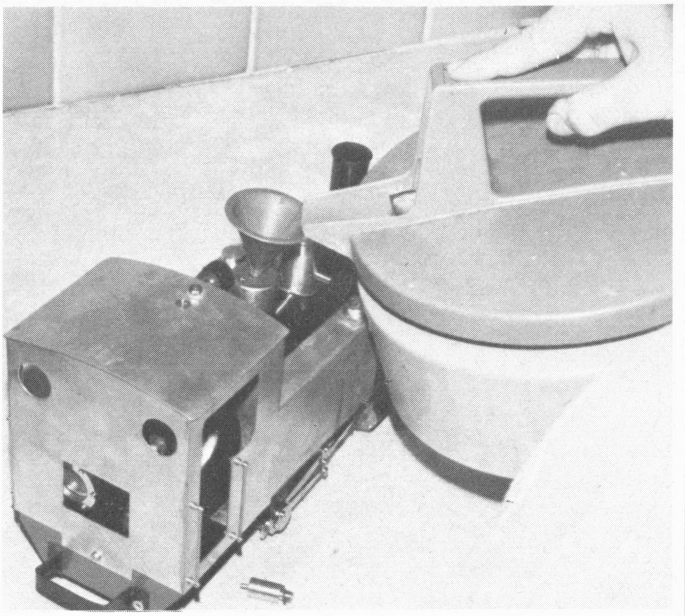




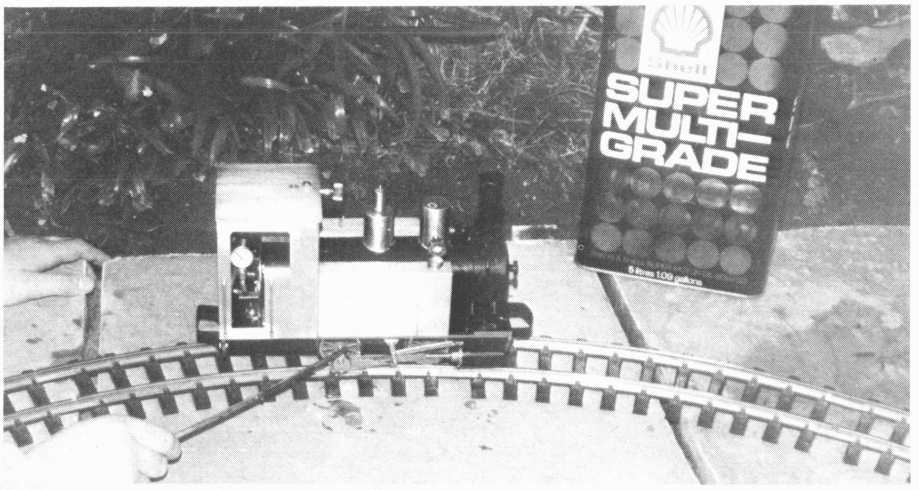
Christine Lake, whose previous live steam experience is nil, assembled the motion and chassis parts, and I took over to install the boiler and cab – and my previous live steam experience is only as a spectator! We found it advisable to tick off the stages of assembly as we completed them to avoid getting confused. We had to replace the gas tank washer (part 48) as it proved too small, and we inserted the boiler screws the opposite way to the instruction sheet, because there wasn't room for a spanner to be inserted otherwise. These minor points apart the model went together like a dream. Performance is superb. We found, however, that the steam pipe nuts must be really tight to avoid steam leaks and thus a power reduction. Trial runs showed this up. The regulator works beautifully, the engine chuffs delightfully, and it is really powerful, handling 12 (or even more) LGB coaches with ease on the flat when fully run in. Butane lighter gas is used for fuel. Turn on the gas, hold a match over the smoke stack, and you have instant firing! Each run is about 20 minutes before more gas and water is required.

In summary, therefore, Merlin Models have really made powerful live steam a very practical proposition. It is reliable and it's certainly safe. All you need is the money. The basic 0-4-0T *Midas* which we made costs £240 for the complete kit. For £265

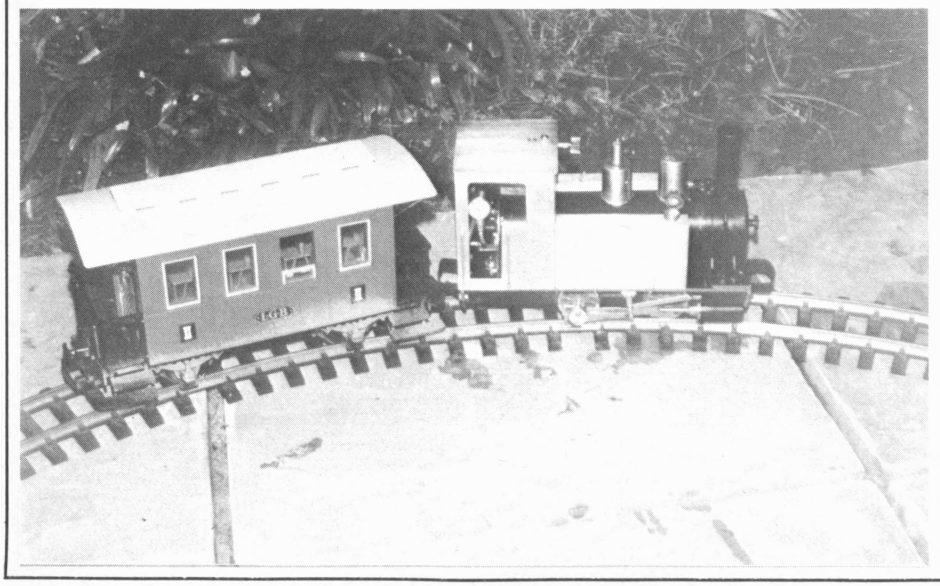




Left: *Fuel is from an ordinary Butane refill, as used for cigarette lighters and sold by all tobacconists. The standard blue nozzle supplied fits the loco gas tank. Shake the can, invert and push into the filler aperture. When the hiss subsides the tank is full.* **Above:** *You can get steam up more quickly by filling the boiler with hot water from the kettle. We are using a useful plastic funnel sold as an accessory by Mamod. The safety valve is unscrewed for filling.*



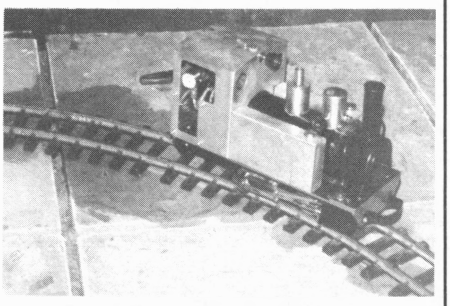
Above: *For successful running all moving parts of a steam locomotive must be well oiled, and kept oiled at frequent intervals. The thin oils used for small scale locos or bicycles, etc, are not suitable. We find motor oil ideal, and a small tin from a service station will last a long time. We are using a dipstick to apply it to all moving parts.* **Below:** *After a few minutes of hissing the loco will raise a good enough head of steam to draw away when the regulator knob on the dome is turned. A coach from the LGB range is here being used to make the first test run in the gathering dusk!*



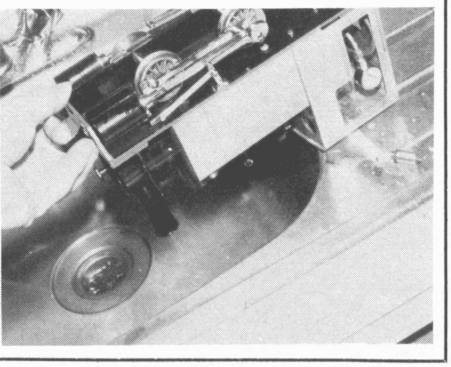
there is a 0-4-2T version, and if you have grander ideas there is *Monarch*, an 0-4-2T with longer running time (bigger tanks), for £290, and 0-6-2T *Matador*, top of the range at £330.

For more details and literature, send a SAE to Tom Cooper at Merlin Models.

Chris Ellis



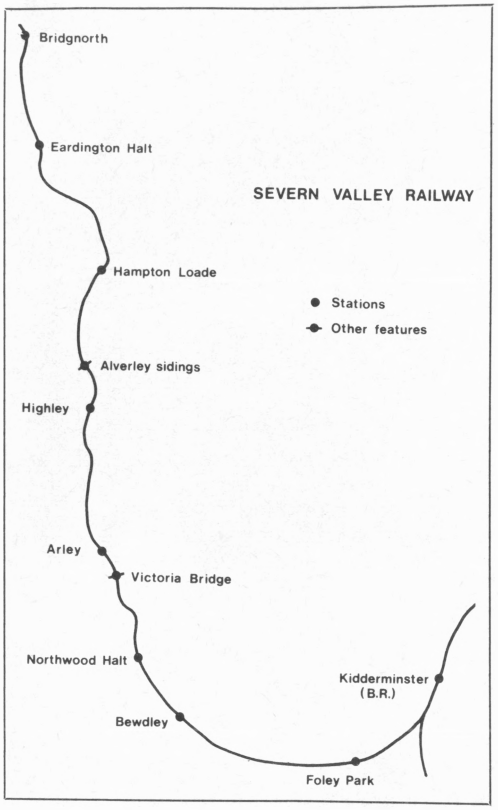
Above: *You can run this sort of live steam indoors, but you are not likely to be too popular unless you have very special running powers or a special den where anything goes! Quite a lot of dribbles and oil runs fall on to the track, and the dark patch seen on the path here is water from filling and steam raising operations, with some oil for good measure. This sort of treatment won't do much for your sitting room carpet, which is why live steam is very much an outdoor activity.* **Below:** *After running packs up for the day be sure to clean off the oil from the motion and drain the loco boiler completely over a sink so that no water is left inside. The safety valve is removed to release the water.*



The Severn Valley Railway

Basis for a layout

Its history, current day operation and modelling potential considered by Peter Marriott.



Bewdley island platform. Note the GWR seats and fire buckets, old signs and notices, and water tower is at the end of the platform. Looking towards Kidderminster. The trees behind the station would be a good idea for scenery on a model layout.

Photos by Peter Marriott

Today the Severn Valley Railway is one of the best examples of a preserved railway in the British Isles. It would make a most interesting basis for a model railway layout with its variety of stations and picturesque scenery along the 12¾ mile route.

History of the line

On August 20, 1853, a Bill received Royal Assent in Westminster 'for making a Railway from the Oxford, Worcester and Wolverhampton Railway near Hartlebury in the County of Worcester to the Borough of Shrewsbury in the County of Salop'. Thus was born the Severn Valley Railway. After various revisions to the original plans (mainly due to financial troubles), construction of the line commenced in the Autumn of 1858. A leasing agreement made in November 1860 gave the 'West Midland Railway' authority to work traffic over the line on a 999 year lease.

After three and a half years of construction (including that of the Victoria Bridge which was the largest cast iron bridge in the Kingdom) the official opening of the line came on January 31, 1862. The first through train from Worcester to Shrewsbury was met with numerous enthusiastic spectators along its journey, and much banqueting to the line's future success was carried on throughout the local environs in the following weeks.

During the period 1863 to 1872 the Severn Valley Railway was amalgamated with the Great Western Railway and as a result, a loop was constructed between Bewdley and Kidderminster. This provided a more convenient link between the Severn Valley line and the Great Western line via Stourbridge Junction to Birmingham Snow Hill station. There was a further plan to connect Bridgnorth with Wolverhampton, but this was finally scotched during the First World War. The Great Western never paid much attention to the line and its initial glamour soon faded when both efficiency and passenger comforts suffered at the hands of its new owners.

The line became more important during the Second World War as a by-pass line for the industrial West Midlands. It then became part of British Railways Western Region in 1948. Again no attempt was made to improve the services or operating costs of the line. When the London Midland Region took control in 1963, the Beeching Axe soon took effect. The last through passenger train to run was on September 9, 1963 and the last freight to leave Bridgnorth ran on November 30, 1963.

The Severn Valley had seen rail services for 101 years, but had certainly never fulfilled the initial expectation of the Mayor of Bridgnorth who in 1852 had proclaimed 'that no more remunerative line would be found in the kingdom'.

Geographical location

As signified by its name, the Severn Valley Railway ran for much of its 40 miles close to the river Severn, which, 220 miles in length, is the longest river in Great Britain. In the south it began at Hartlebury Junction on the Birmingham to Worcester line, and travelling northwards encompassed Stourport, Bewdley and Bridgnorth as its main stations, terminating at Shrewsbury General.

The line was engineered by John Fowler and built by Messrs Brassey, Peto and Betts. Due to the undulating nature of the valley, the line was not easy to build and two tunnels, several bridges and numerous cuttings and embankments graced its course.

Rich farming country has ensured this has remained predominantly a non-industrial area, and the three main towns on the original Severn Valley Railway are still some of the most attractive and historic riverside settlements to be found in the British Isles, ie Bewdley, Bridgnorth and Shrewsbury.

Bewdley stands on the edge of the beautiful Wyre Forest approximately 20 miles from Birmingham. Its quaint buildings, fishing, folk museum and unspoilt

walks have ensured it is a very popular West Midlands tourist area. Its road bridge spanning the Severn river was constructed during the 1700s by Thomas Telford.

Bridgnorth is an ancient market town divided into High Town which stands on a sandstone ridge, and Low Town on the river banks; the two 'Towns' are linked by a Cliff Railway climbing a gradient of 1 in 1½. The town boasts the remains of a castle erected in 912 AD.

Shrewsbury also features a castle in addition to much Elizabethan black and white half timbered architecture. It stands in the loop of the River Severn but due to the cutting of the line at Bridgnorth, it is no longer served by the Severn Valley Railway.

Severn Valley Railway preservation

The genesis of what has become one of the most popularly preserved lines in the country certainly grew from figurative acorns. A meeting of 50 people in Kidderminster on July 6, 1965, was the origin of a society that now has a membership of some 8,800, namely the Severn Valley Railway Society.

Originally the aim of the group was to restore steam passenger services between Bridgnorth and Hampton Loade. In 1965 British Rail was still using the southern section of the line for coal trains running between Alveley Colliery and Bewdley and had already commenced demolition of Bridgnorth Station. A hurried telegram to British Rail headquarters soon relieved the demolition contractors of a job, and the long haul to bring steam back to the Valley commenced in earnest.

Jumble Sales, Open Weekends and many other activities were utilised to boost the Society's funds, and volunteers immediately set to work preparing the line for its future roles, eg repainting Bridgnorth Station, pruning trackside vegetation.

Then followed a series of lengthy negotiations with local councils, British Rail and the Ministry of Transport in connection with operating services once more. The eventual granting of the Light Railway Order brought steam operated passenger services from Bridgnorth to Hampton Loade from May 23, 1970. In the years prior to this, enthusiasts and members had to be content with viewing loco's 'in steam' in the Bridgnorth station environs only.

South end of Bewdley island platform. 7812 Erlestoke Manor *is in immaculate condition. GWR 2857 has just taken on water.*

Since May 1970, patronage of the line has continued to grow to the extent that in 1978 over 155,000 passenger journeys were made (this figure included 25,000 school children). The rails owned and operated by the Severn Valley Railway Company have now grown to encompass approximately 14 miles from Foley Park just outside of Kidderminster to Bridgnorth via Bewdley.

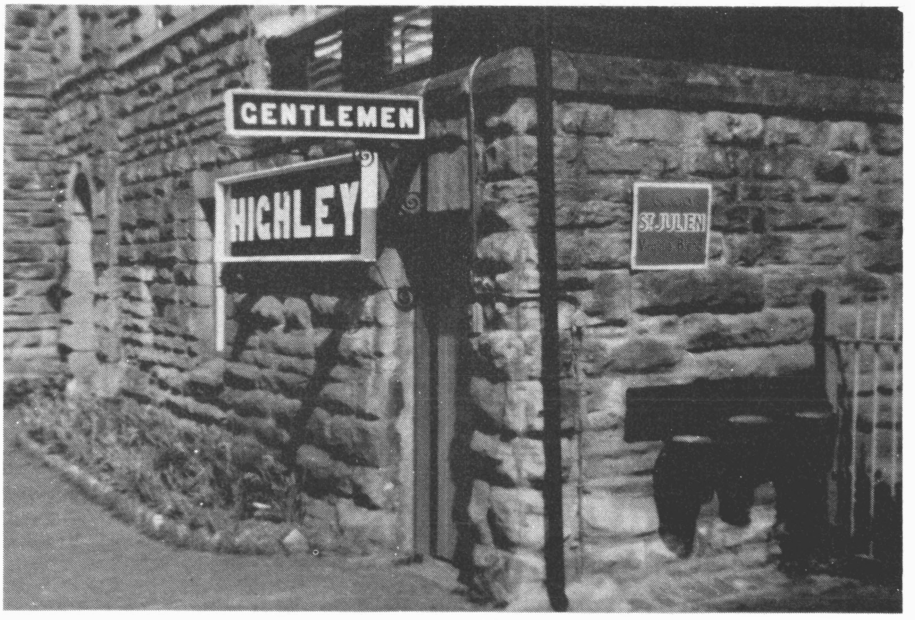
Future plans include the possible extension of steam services to Kidderminster on the Birmingham–Worcester British Rail diesel operated line.

Services up to closure

The basic pattern of services over the line changed little during its 101 years of operating. There were four or five through passenger trains between Shrewsbury and Bewdley, for most of the period supplemented by other services divided between those on the southern portion of the line (ie Hartlebury and Bridgnorth) and those on the northern (ie Bridgnorth and Shrewsbury). Normally on Sundays only one through train ran each way, but there were regularly additional trains running on Saturdays. Weekend excursion trains from Birmingham Snow Hill sometimes ran to the very popular fishing venues of Arley and Hampton Loade. Alveley's Colliery also brought traffic to the line in the form of early morning miners' trains.

Freight traffic mainly consisted of coal trains from Alveley running both north and south and also the transport of agricultural products from this very fertile area. A pick-up freight used to slowly amble the line before the days of convenient road transport, but coal was still moved by rail from the Colliery up to January 31, 1969.

Luggage trolley. Note the small lettering, and luggage with GWR labels. This is at Bewdley.



Highley is a single platform station. Notice the fire buckets in case of an emergency and the enamel advertisement above them, giving this station a well-kept, typical GWR look. Signs are black with lettering in white. Note flower bed.

Current services

It is ironic to think that during current summer weekends, there can be upwards of 10 trains running each way between Bridgnorth and Bewdley. This provides a better and more frequent service than ever appeared over the previous 117 years. Such is the success of the Severn Valley!

Services are operated between March and October each year, in addition to a series of 'Santa Specials' running between Arley and Bewdley or Bridgnorth and Hampton Loade at the turn of the year. The main summer months see daily operating, but at other times, weekend, bank holidays, and midweek schools specials, run according to season.

During 1979 five very successful special weekends were arranged which included a more intensive service and an extension of operations to Foley Park, approximately half way between Bewdley and Kidderminster. These weekends included 'Great Western Railway', 'Steam Galas' and 'Western' events. A freight train is also run for the benefit of enthusiasts and photographers alike at these occasions.

From early June to mid-September a Restaurant Car Train runs each Sunday serving a reasonably priced four course lunch. As the Severn Valley Railway timetable says – 'Comfort, great scenery – the ideal family treat'.

Another avenue of revenue comes from the 'Mince Pie' and 'Santa Specials' which run from 1st December to 1st January each year. Mince pies, punch and gifts for the children are the incentives given to those travelling the line during this period.

During August 1979, British Rail provided a diesel multiple unit service from Kidderminster to Bewdley as an experiment in providing direct British Rail access to the Severn Valley Railway line. The results were promising and a similar service was in consequence put into operation for the summer of 1980.

Description of the line

To travel the Severn Valley is to take a journey back into the early 20th century. The stations are all well kept and abound with gardens, old enamel signs, GWR seats, lamps and fittings. Even without the trains, the buildings are living museums to a bygone age of local transport. Of course, the steam locomotives, and their stock add the finishing touches to the present scene in a wonderful tribute to the line's original architects and builders, and to the present day hard-working men and women who put great amounts of time and effort into running and maintaining what they refer to as 'Britain's Premier line'.

The Severn River Valley is still mostly unspoilt and provides a beautifully peaceful setting for the railway. It is a very popular weekend recreation area with local West Midlands people. Sailing, fishing, walking, rowing, hiking, (plus train spotting of course!) are all popular activities carried on in the Valley.

There are five main stations on the line supplemented by two halts, and the usual service between Bewdley and Bridgnorth takes 55 minutes to cover the 12¾ miles.

Bewdley station is the home of the carriage and wagon repair workshops and additionally, visitors can always watch locomotives (in various states of disrepair) receiving attention. There are three platform roads and the majority of the services run from the island platform which is resplendent with a restored Victorian gentlemen's toilet. The platform is reached by crossing a wooden footbridge. Both north and south signal boxes are still in use, together with the main station buildings and goods shed.

The main station building at Arley from the road bridge to the River Severn and Arley Village. No 6443 on a train to Bewdley is an LMS Ivatt small 2-6-0 with added smoke deflectors.

Leaving towards Bridgnorth an eight arch sandstone viaduct is used to cross the main Kidderminster – Bewdley road. Two miles northwards is Northwood Halt which is a request stop and possesses a level crossing leading to the nearby camp site.

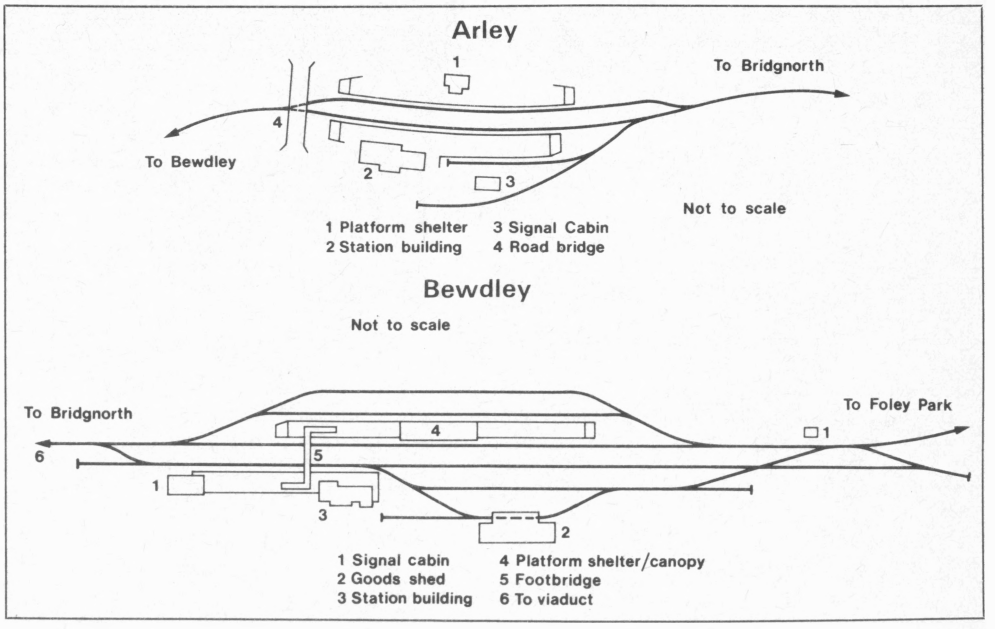
Half a mile before the next station (Arley) is one of the engineering highlights of the line, the 200 foot Victoria Bridge. This is a much photographed structure and reached stardom recently in the latest film version of *The Thirty Nine Steps*, being used as the setting for Hannay's escape from the 'Midland Region Express'.

Arley station is certainly in keeping with its location in one of the most picturesque villages in England. The platforms are always a blaze of colour from the combination of marigolds and enamel advertisements thereon. It is the first passing station from Bewdley and both the signal box and station building are impeccably maintained. A most inviting coal fire burns in the waiting room in the winter months.

Two and a half miles further on is the single platform station of Highley. A village grew up here as a mining settlement for the local Highley Pit, Kinlet stone quarry and nearby Alveley Colliery. It has a small goods yard, and passing loop which cannot be used by passenger trains due to the lack of platform facilities adjacent to that line.

Hampton Loade is reached after two miles of riverside and woodland travel and is yet another well cared for station. It has two platforms serving the main line and passing loop and additionally has one siding used for storage of rolling stock.

Half way between Hampton Loade and



Bridgnorth is Eardington Halt. This is a single platform standing amidst sandstone cuttings.

After passing through Knowlesands Tunnel and crossing Oldbury Viaduct, the northern terminus of the line, Bridgnorth is reached. This is the home of the majority of the locomotives and the maintenance and repair facilities are some of the best in the country. Two platforms joined by a lattice iron footbridge and a rustic stonework main building provide a fitting conclusion to the journey.

Gift shops and buffets are provided at both Bewdley and Bridgnorth for the convenience and pleasure of the visiting public.

Modelling potential

Scope to model the Severn Valley is endless. You could either attempt to construct the entire line (if you had sufficient space and resources!) or one of the five stations it possesses (together with one of the two halts for good measure). As I see it, the advantages for modelling are as follows:

(a) It is a working railway, and can be studied by personal visits which are always more interesting than pouring over books.

(b) Its adjacent countryside is magnificent and makes a fine 'home' for a railway scene.

(c) There is a wide variety of stations to model, eg, (1) Bridgnorth is now used as a terminus in view of the lifting of the track north of the station. (2) Arley, Highley and Hampton Loade, as differing through stations, all possess signal boxes and buildings worthy of modelling. (3) Two halts which could be used as points of interest on an 'empty' stretch of line. (4)Bewdley with interesting traffic movements and a link with the British Rail network.

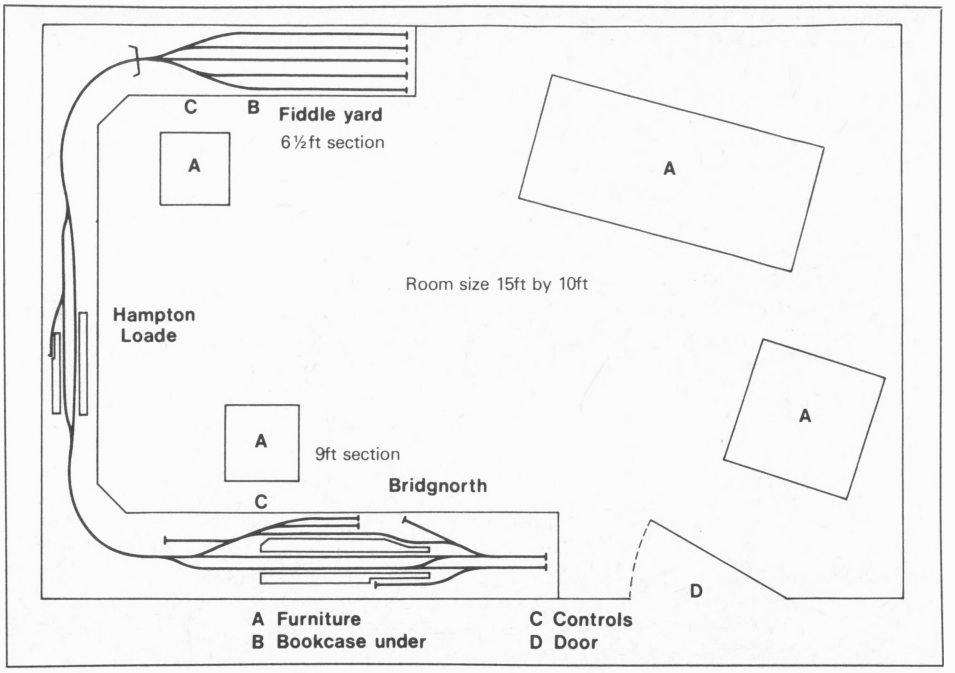
(d) Sufficient engineering structures, eg, viaducts, tunnel, cuttings, level crossing to provide additional scenic scope.

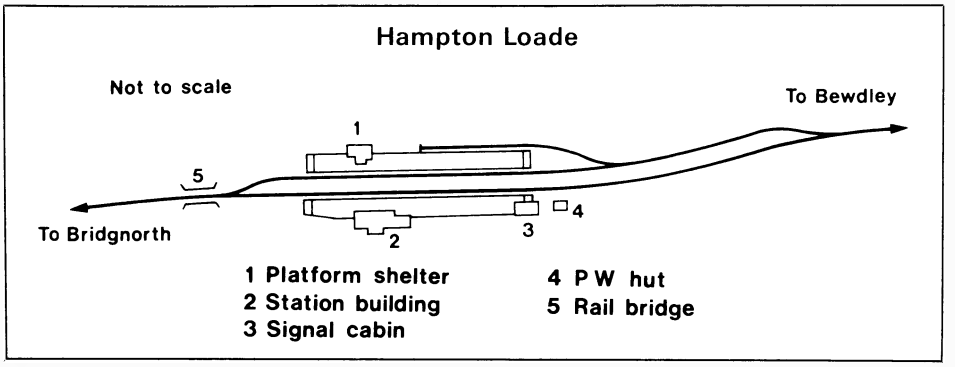
(e) With a clear conscience one can run almost any type of steam locomotive (or diesel in view of the recent arrival of *Western Ranger* and *Western Courier* on the line) on the premise that the Severn Valley could operate it as a preserved locomotive on usual services. The line possesses around 30 steam locomotives and various makes of coaches in addition to a goods train for special services. There would therefore be plenty of room for just a few more of your favourite locomotives to be seen running on 'your' version of the Severn Valley Railway.

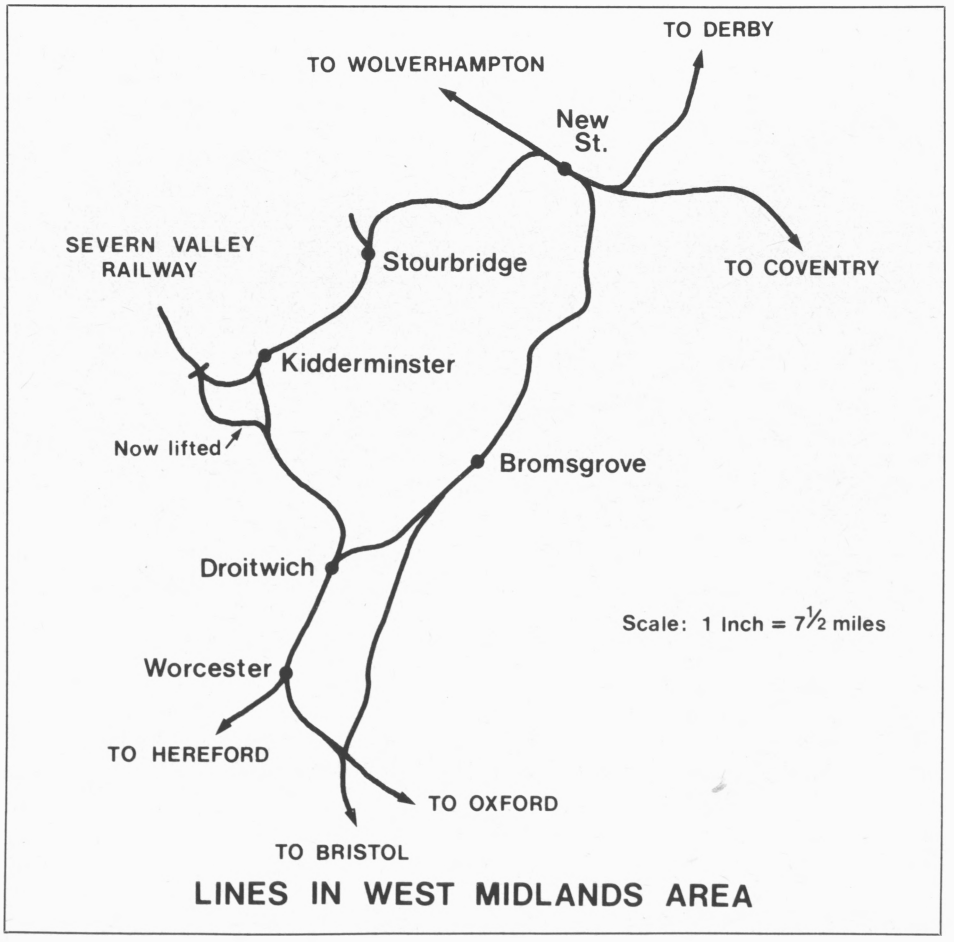
As can be seen from the adjoining sketches a variety of layouts can be devised by deciding which particular station layouts you intend to model according to the space available. End to end, tail chasing oval or an extensive layout using a dumb-bell fiddle yard could all be tackled. The drawing shows a specific idea, depicting Hampton Loade and Bridgnorth.

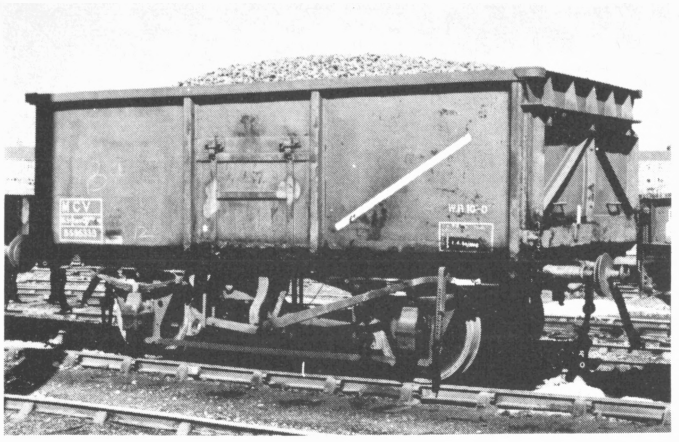
A visit to the line would certainly prove beneficial for anyone considering modelling any part of the Severn Valley Railway and would in any case be a most enjoyable day for any rail enthusiast.

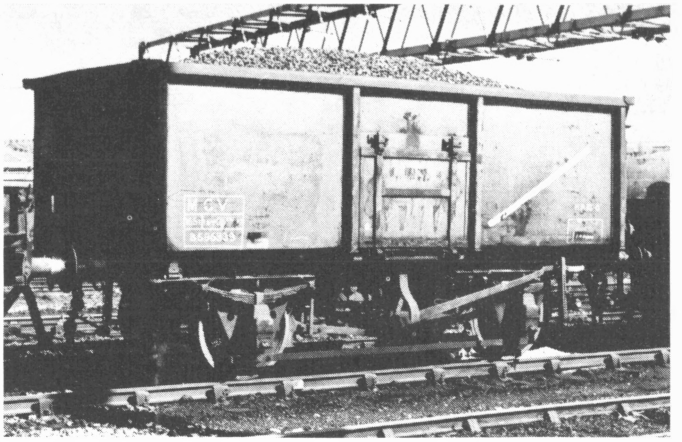
Preserved lines today certainly provide the railway modeller with a lot of scope for his hobby and enable him to see at first hand current day operations of these most interesting ventures.







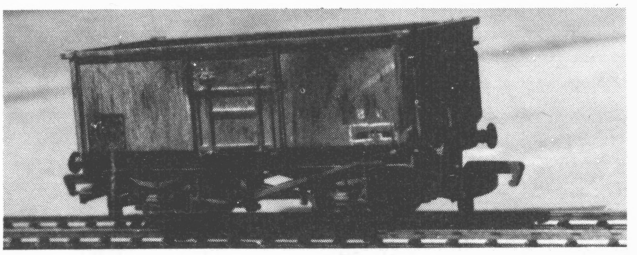




The 10ft wheelbase rebuild can be adapted from ready-to-run models in any scale

Views from each side of B596339, one of the Horwich rebuilds on a 10ft wheelbase underframe, now rated at 16.5 tonnes and designated MCV. Pictured at Dewsnap Sidings, Guide Bridge, as currently running. Brown finish with white markings, white lamp brackets, and white brake handle, underframe black. Note in particular, position of the wagon clip board, lamp iron each end, screw couplers, brake pipe, single vacuum cylinder, and number plate over the left hand springs on solebar. Weld line can be clearly seen where top flaps of side doors have been replaced (Keith Allen).

MCV in modern guise



The 16 ton steel mineral wagon is one of the best-known BR freight vehicles, still to be seen in large (but diminishing) numbers. It is widely available in model form as nearly all the ready-to-run makers include one in their lists, and it is produced in all the popular scales – Lima/Novo for O gauge, Wrenn, Hornby, Mainline, Grafar for OO, and Minitrix/Lima for N. In addition there is the Airfix assembly kit in OO and a CCW kit for O gauge.

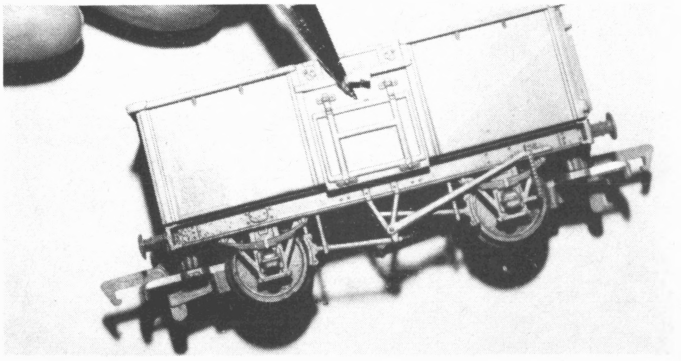
Both the kits have the correct wheelbase for a standard 16 tonner, which is 9ft, though a little more detail changing is required on the underframe and brake gear even with these models depending on which of the several variations of 16 tonner you model. This is beyond the scope of this particular model, however, for this conversion applies only to the ready-to-run varieties. The problem with all these models, from a purist point of view, is that they are all on the standard 10ft wheelbase underframe which each company makes to suit a variety of body styles and thus ensure economical production – a point made in these pages several times in past reviews. In some cases even the body dimensions have been slightly distorted by the maker to suit the underframe, though each model captures the character of the real thing pretty well.

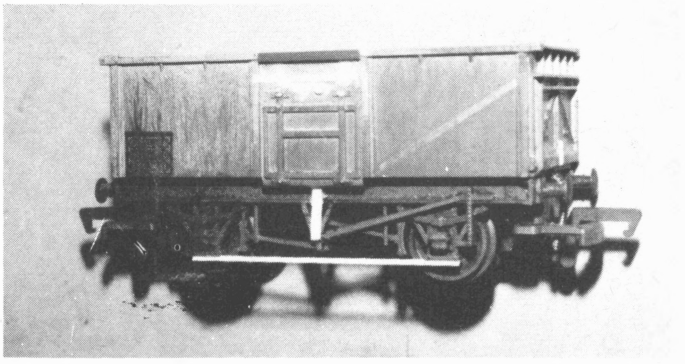
The problem was touched on, on page 256 of the May 1981 *Model Trains* dealing with the Lima and Novo O scale versions, where we said one answer to the problem of the incorrect 10ft wheelbase is just to accept it on the grounds that it is not too noticeable. What is not so well-known, however, is that British Rail have come to the aid of modellers in recent years by adopting a 10ft wheelbase for some 16 ton wagon rebuilds, a real-life conversion unusual in that BR are doing what the model manufacturers have been doing for years, switching bodies around on standard underframes!

Above: *Model after repainting and weathering. The thinnest Kemco white lining was used to make the number panels. If you do not have the correct numbers or letters to hand, you can take the sneaky way out as we did and put on the nearest to hand, then all but obscure them with dirt and weathering so that the complete presentation is not fully readable. If you work in N scale, the Minitrix wagon comes correctly coloured (and it already has the tie-bar) so only needs new number panels.*

There is a batch of vacuum fitted wagons (MCVs) numbered B596000-B596393 that have been rebuilt on old Palbrick and other underframes at Horwich during 1975-78. Apart from their wheelbase of 10ft, they are standard design rebuilds. Their brake gear, however, is a mixture of

Bottom left: *Start by carefully carving away the top flap details from the door panels, using a sharp new blade and taking care not to cut too deeply into the plastic or scar the area.* **Below**: *Fill in the top rib with either square section plastic strip of suitable size to match the rest of the ribbing, or find scrap plastic (eg, window framing) from a kit to match the size, as has been done here. Add tie-bar between axle boxes (in the case of the Mainline wagon) from 1mm Microstrip, and make door stops from 2mm Microstrip, each 9mm long and gently curved to shape around a pencil. The lamp brackets at each end are 3mm lengths of 1mm Microstrip (dimensions for 00 – adapt accordingly for N or 0 scales). Guitar G string was used for the brake pipes with holes drilled in the buffer beams.*





4-shoe Morton and the BR 8-shoe type. They have only one vacuum cylinder and their buffers are of the ordinary sprung or Oleo types.

The main modifications required to models in all scales is to remove the top flap detail and horizontal rib from above the side doors, taking care to not damage the door catches. Then fit a new top rib made from plastic card or scrap plastic strip with a small triangle under the rib in the centre. Next step is to round off the bottom of the main side panels and fit end lamp brackets and vacuum pipes to conform with standard BR modifications to 16 tonners in the 1970s.

One point about the Lima gauge O wagon is that the horizontal rib over the side door should be carried along the full width of the door spacing so this requires filling in with plastic card strips, an extra modification applicable only to this model.

To demonstrate the work required we took a Mainline model which was already running in weathered finished, modified to a modern 10ft wheelbase rebuild, then painted and weathered it again. As most modellers with OO gauge layouts will already have some of these ready-to-run 16 tonners to hand, here is a good chance to make them even more authentic and if you model the current era this is obviously a 'must' conversion. We found it took less than an hour per wagon to make the alteration on the Mainline wagon. This included the axle guard tie-bars. You may find other makes (such as Lima/Novo gauge O, Minitrix N gauge, etc.), already have them, cutting down your work even more. Obviously there are shortcomings even here because you are stuck with the underframe the manufacturer provides. In the case of the Mainline model the axle boxes are slightly too shallow and the frames are not quite the correct pattern, but in these small scales the effect is achieved. The Wrenn and Mainline models are best for conversion in OO scale, the Hornby version being rather more distorted to fit their underframe. Depending on the scale and make you may need to add small details to the solebars, too, such as builder's plate and docket clip. Follow the photographs to see the actual work involved.

If you model the pre-1975 period, you can still improve these 16 tonners to make them look more like the original unmodified version. For a BR unfitted wagon, remove the vacuum cylinder, one set of brakeshoes and the axlebox tie bars. The top flap detail can also be removed to represent a rebuilt wagon. In most cases the buffers supplied are of the Oleo pattern and are correct for the 10ft wheelbase fitted wagons; some unfitted wagons are also fitted with these but the majority have the sprung type.

On the subject of livery; numerous mineral wagons have appeared in private owner schemes such as the ICI soda ash wagons, now coded POO. Some of these have their side doors removed although they still retain the end door. Others have rope fixings welded on to the body and underframe for fastening down tarpaulin sheets and a bar welded to the centre of the ends running the full length of the body. These wagons are painted in a blue colour scheme (Airfix G6 and matt varnish) with white lettering and ICI symbol. CEGB have some wagons, these being painted yellow (Humbrol M24) with black lettering and solebars. Then there are the NCB wagons. The livery for these is one of an overall blue (Humbrol M25) with white lettering and regional markings. It would be useful to modellers if the manufacturers of model 16 ton wagons were to produce some of these private owner finishes instead of the non-authentic PO variations which have been produced. Mainline did produce an ICI version, but that's about all.

Dave Lea/Chris Ellis

Test Track

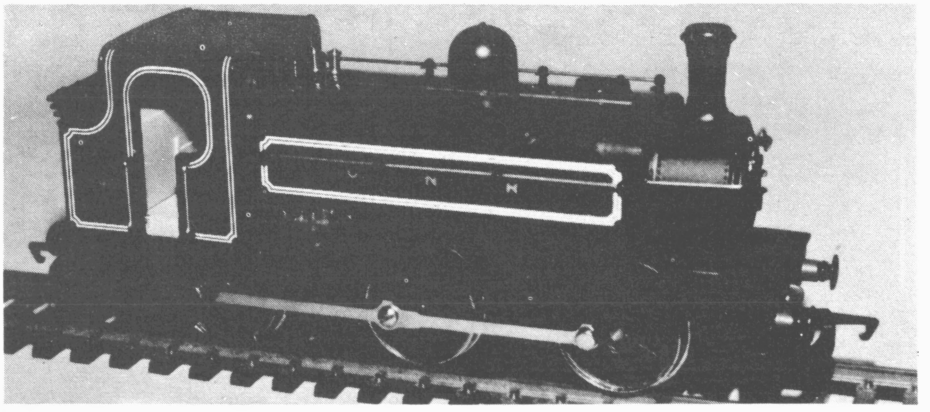
from page 397

On the track the model performed superbly, having the usual tender drive pushing a well weighted 'dummy'. The loco tracks very well and runs extremely smoothly. The overall performance was as good as that previously described in these pages for the A4 and 'Patriot' – in a word 'excellent'. An advantage of the tender drive is that the full underside of the exposed boiler can be modelled, a fact which Hornby have exploited. The chassis frames, however, appear to be from earlier patterns, retaining the cut-out for the motor which the new body cleverly fills in. We would have liked to have seen a second coupling hole in the tender drawbar so that those with gentler track curves can close couple the tender. To do this on the model as it comes you'll need to enlarge an existing hole, but that is not too easy with die-cast metal. Fitting instructions for a Zero-1 module are supplied with the model, as are a loco crew and brake pipes.

Hornby: GNR J13 0-6-0ST, 1:76 scale/00 gauge, UK £16.95

It is pleasant to have a small loco type to suit LNER fans, and this new Hornby production shouldn't disappoint anyone as the prototype was packed with character and charm. Also, the J13 of the GNR (which became J52 of the LNER) was widely used, all along the east coast route and specially in the London area and Yorkshire. The model uses the new style standard 0-6-0 chassis with a motor set low and driving the leading axle so that the cab is not obstructed. Our particular sample ran very well, more smoothly than the last model from Hornby with this chassis, the GWR 0-6-0PT, and we could get a slower crawl out of it, which probably goes to show that with these mass-produced models some purchasers may be luckier than others and get exceptionally good runners. No 1247 is preserved at York, and Hornby faithfully reproduce it in GNR colours which might also make it suitable for the early LNER period, though these locos were definitely black once repainted by the LNER. Pictures of the locos in GNR days often show them to be quite dirty, even though painted in lined green. All the detail accords well with pictures and drawings, the model depicting the early bunker style. There were many variations, however, notably in the run of some of the piping, and there were locos fitted with condensing equipment, so there is scope for conversion of the model. The boiler sides are skirted below the tanks on the model, and painting the area black would improve overall appearance.

Checked against published dimensions the wheels are correct scale measured over the tread, and all basic dimensions are correctly scaled, so the end result is very good – better than the same firm's previous Pannier tank, for example. The only matters to remark are that the piping could do with repainting, the handrails need painting to match body colour (even in GNR days on shunting engines, from pictorial evidence), and the chassis securing lugs intrude into the piano front beneath the smokebox door, but not obtrusively so. A leaflet with the model gives Zero-1 fitting details and suggests fitting in an adjacent van. However, it looks as though it might just be possible to squeeze it in the cab if you cut away the nice cab interior and maybe fit closed cab doors to hide its presence, but we must stress that we haven't tried this to see if it is possible. Zero-1 users can try it for themselves to see if a module will, in fact, fit over the cab/bunker floor area.



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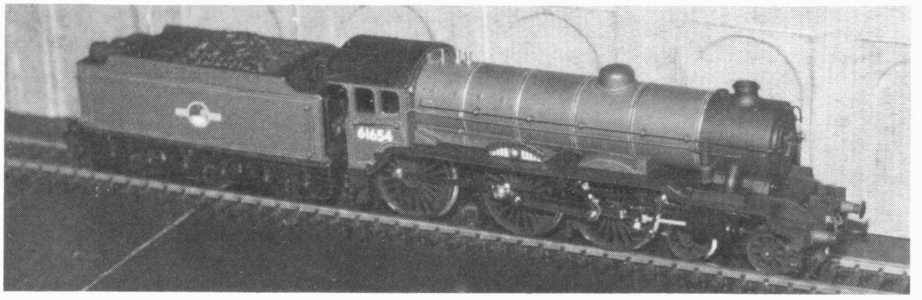
'Footballer' in BR style

Richard Elven converts the Hornby B17 for the post-1948 era



Right: *The model looks surprisingly different when repainted in the much darker lined BR green.*

The Hornby B17 is an excellent model but for a layout set in the late LNER or British Railways periods it requires a few modifications. The engine modelled by Hornby is a B17/4 ('Footballer') but during the 1940s they were rebuilt to B17/6 by the replacement of the boiler with a B1 (100A) boiler. If a 'Sandringham' is required it is necessary to replace the tender supplied with a Great Eastern type. This is not easy as the Great Eastern tenders were shorter than the Group Standard tenders and therefore you would have to look for an alternative means of motorising the model. One way might be to chop up a B12 tender top and mount it on the chassis of the 'Patriot' motorised tender. Let me stress that I have not tried this or even measured it, but Hornby suggest it would be possible.

Originally the 'Sandringhams' were sent to the Great Eastern section and the 'Footballers' to the Great Central. After nationalisation all the B17s were on the Great Eastern section. However this should not stop you having one on your layout as from 1943 Darlington was responsible for major repairs. At about the same time some 'Footballers' were fitted with Westinghouse pumps so that they could work Westinghouse braked stock. I would recommend that you consult *Locomotives of the LNER Part 2B* (RCTS) for further information on your particular locomotive (though this book is currently out of print it seems).

Before work could start it was necessary to dismantle the locomotive. The tender body was eased off as set out in the standard instructions included with the model. The engine was dismantled following the instructions for the fitting of the Zero 1 module. As can be seen from one of the photographs it separates into five separate units. Before separating the boiler and smokebox, the handrail unit should be removed as it is only a push fit. Also at this stage it may be an idea to remove the window unit from the cab and the brass whistle and safety valves from the boiler. Keep these parts safely until other work is finished.

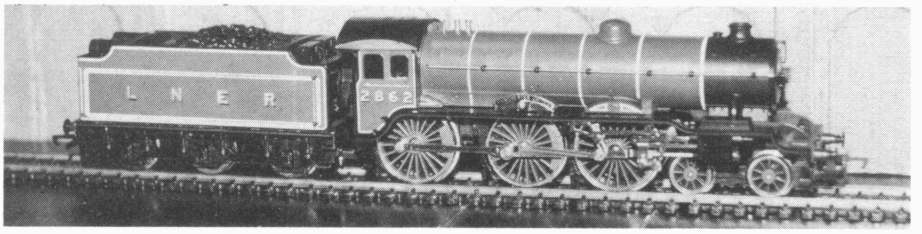
The moulded handrails on the tender were removed with a sharp craft knife. The appropriate holes were then drilled in the body using a ½mm drill bit and the removed handrails replaced with wire and handrail knobs. I used plastic handrail knobs which were left over from a kit, but brass ones should suffice, although I think the holes should then be a bit bigger. The tender as supplied is correct for the livery chosen by Hornby. However for the late LNER and British Railways periods it is necessary to remove the left hand vacuum cylinder (as looking to the front). The cylinder is easily pulled off but it is necessary to remove the pips used to hold the cylinder in place with a sharp craft knife. To do this I did not use the normal shaped blade, instead I used a chisel shaped blade as it was easier to use in the restricted space.

My attention then turned towards the actual locomotive body and again the first step was to replace the moulded handrails. The handrails on the cab side were replaced with wire and handrail knobs. Those on the cab spectacle plate and the front of the footplate were replaced with bent wire.

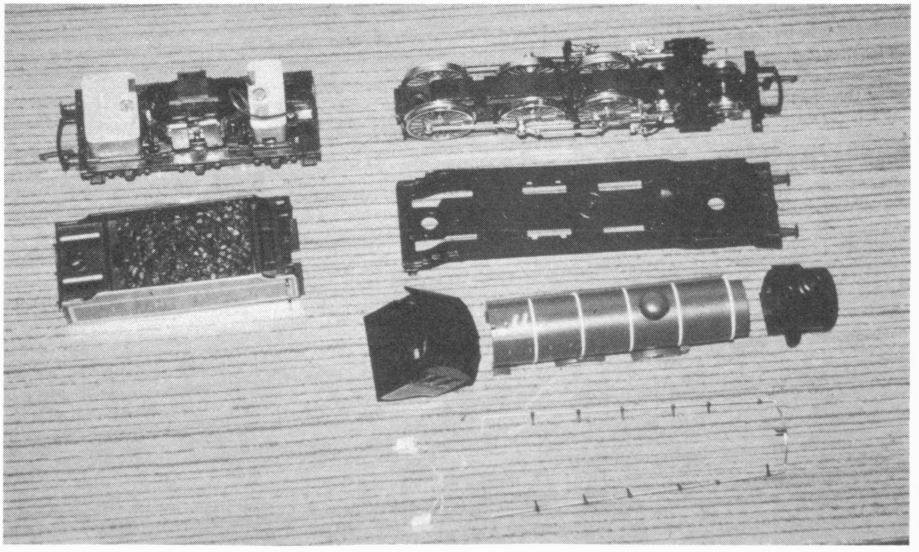
If your curves will allow it, it is certainly best to replace the front footplate steps. If you do not mind losing the Hornby coupling unit (to which Hornby's representation of the steps are attached to), it can easily be removed from the front bogie. If you do not want to lose the front coupling unit, it should be easy enough to cut off the steps from the coupling unit. The replacement steps were manufactured out of brass which was also left over from a kit. These were bent to shape as shown in the diagram, the second step being soldered on after the bends in the unit were strengthened with solder. The completed unit was then glued to the footplate as can be seen in the photographs. Alternative to this is to make up steps from plastic card.

I wanted my model to be 61654 *Sunderland* as it is the town I come from and so I had to fit a Westinghouse pump on the right hand side of the smokebox. Mine is a relatively cheap white metal casting which should be obtainable from your local model shop. The casting was glued in position as can be seen from the photographs and drawing. Incidentally

The Hornby model as bought.

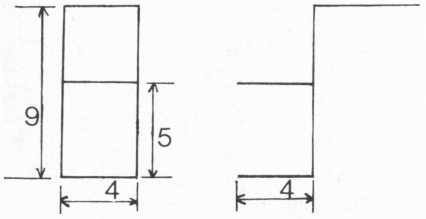


The model dismantled before conversion work started. Note that the dome also comes off but is not shown as such here.



the correct way round for the casting is with the pip on the bottom cylinder against the boiler. The plumbing to and from the pump was then manufactured out of nickel silver handrail wire. A ·5mm diameter hole was drilled in the smokebox above the steam pipes as can be seen in the drawing. The shorter piece of wire was glued into this hole. A longer piece of wire with bends at each end (refer to drawing and photographs) was glued between the cab and pump along the boiler. Anybody who has used nickel silver wire before will know how springy it is. To remove this I heated the wire in a gas flame before use.

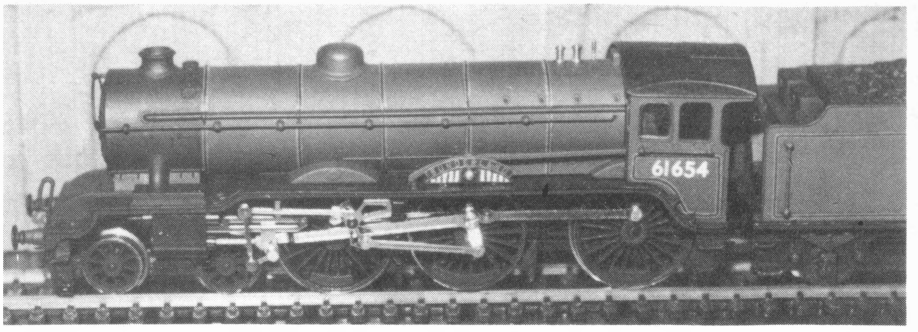
Above: *Colours for the* Sunderland *splasher are red and white vertical stripes with a black centre carrying the brass football motif.*
Below: *Dimensions and make-up for front footplate steps – all dimensions in millimetres.*



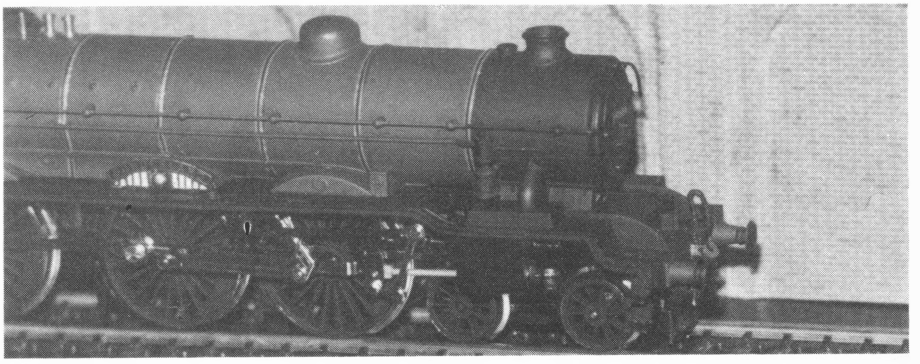
In my introduction I mentioned that in the British Railways era the B17s were fitted with B1 boilers. It is not necessary to alter the boiler as the B17 boilers and B1 boilers were very similar. In fact the only external difference between the two was an extra inch added to the length of the firebox. As you can imagine it is not worth altering the boiler for that.

After all the alterations were complete, the model was ready for painting. As I was going to use an airbrush to paint the majority of the model, the fact that it split up into separate units was very useful. However it was still necessary to mask off some of the black areas with Maskol. These areas were the tender front and top and the cab interior and roof. The cab, boiler and tender body were then painted British Railways passenger green. It was also necessary to paint the driving and bogie wheels black, paint out the red lining on the footplate and tender chassis and touch up certain areas with black paint. The reversing lever was also brush painted green.

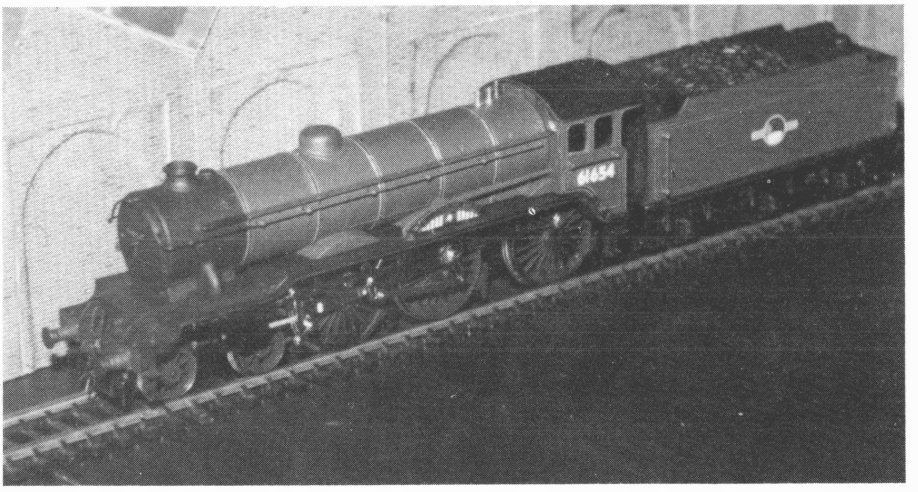
The model was then lined and lettered using the appropriate transfers from the Pressfix range. The boiler band over the firebox on the B17s was lined. This is unusual as it was not normal policy to line this particular boiler band. The only other class that I know of which had the boiler band over the firebox lined were the A4s and then not all of them did. Brass nameplates were stuck on to the Hornby nameplates. The football club colours were then painted on underneath as shown in the drawing. The white background colour was first painted on and left to dry. Then the red stripes were added later.



Close-up of front of locomotive. Note the improved nameplate and front footplate steps. Also notice that the largest size of numbers on the Pressfix sheet were used.



Close-up of Westinghouse pump and front of locomotive.

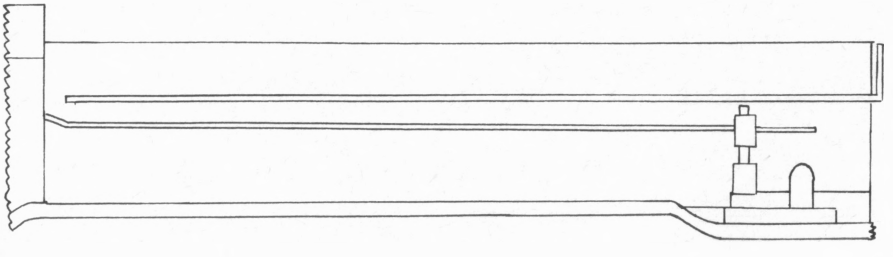


General view of the completed model from the left side. This view shows clearly the boiler lining including the extra one over the firebox band. Note also only one reservoir on the rear tender top.

The locomotive body was re-assembled and after the Hornby handrails were replaced, they were painted in the appropriate colour. The tender and locomotive bodies were then given a coat of matt varnish to protect the transfers and paintwork. After this had dried a screw coupling was added to the front. The cab glazing, brass whistle and safety valves were then put back on to the body and the locomotive was put back together again. A smokebox number plate was then attached to the smokebox door just below the top smokebox hinge strap.

May I thank my father for taking the photographs accompanying this article and also Miss Riona Smith for typing the original manuscript.

Below: *Full-size (4mm scale) sketch of boiler to show exact position of Westinghouse pump and associated piping.*



Focus on the Sandringhams

E. H. Sawford looks at B17s in BR days

Over the years 1928 to 1937, seventy three B17 class locomotives were built by two private companies and Darlington works of the LNER. Designed by Gresley, the locomotives were built to assist or replace the older classes on the GE section.

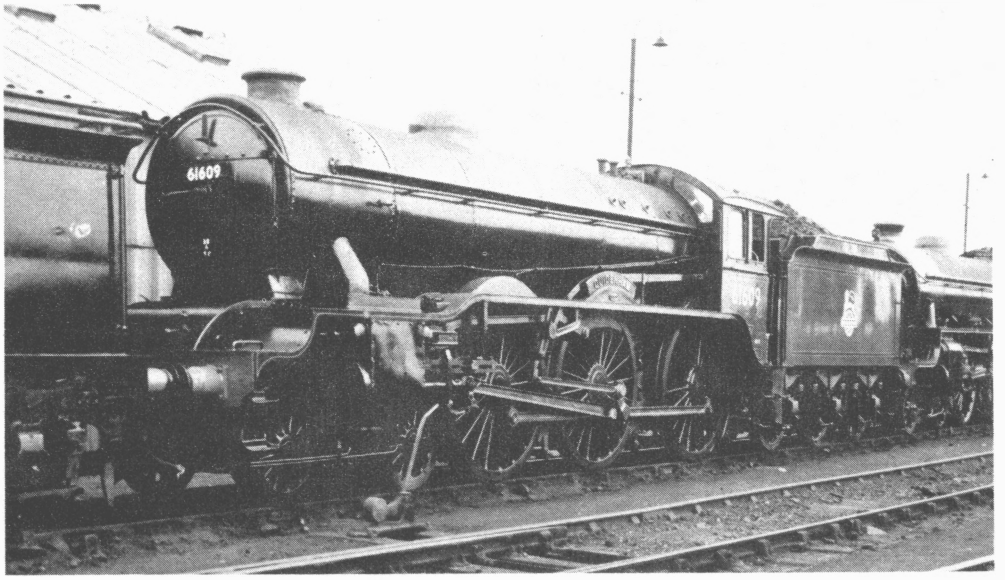
Two members of the class were streamlined in 1937 for working the *East Anglian* express. The streamlining was removed in 1951. They closely resembled Gresley A4s in streamlined form and could easily be mistaken for A4s at first glimpse.

All the locomotives were named, mostly for country houses in LNER territory, or after famous football clubs. An exception was 61671 renamed *Royal Sovereign* in 1946 for service as the 'Royal' engine over the old GER section. Three engines were named after East Anglian regiments – *The Essex Regiment, The Suffolk Regiment,* and *The Lincolnshire Regiment.*

In summary the class was divided into B17/1 (original 1928 'Sandringham' series with small GER tenders), B17/4 (1936 'Footballer' series with LNER group standard tenders), B17/5 (the streamlined pair, and B17/6 (rebuilds with 100A (B1-type) boiler). In 1945 Thompson rebuilt ten machines into the B2 class. With two cylinders, 100A boiler, high running plate, and shallow depth cab, these locos quite closely resembled the B1 class. *Royal Sovereign* was one of these. Three locos had the standard tender and the rest had old C7 class (NER) tenders.

Though tenders did change around a little, as a general rule, 'Sandringhams' had the GER type small tender and 'Footballers' had the big 4,200 gallon standard tender. From 1936 only *Helmingham Hall* of the 'Sandringhams' had the big tender.

61662 Manchester United *at Stratford depot May 1955. This locomotive was fitted with straight sided tender. Aside from absence of a Westinghouse brake pump, the locomotive is in the BR condition as described in this month's modelling article. Note the B-17 class indicator on the buffer beam, a relic of LNER practice. Livery is lined BR green.*



Bright as a new pin, 61609 Quidenham *is seen here after overhaul at Doncaster works in September 1956. This is a typical 'Sandringham' in the 1950s, fitted with the small GER type tender. Note the very crude looking cables running down the boiler side – could be duplicated by fuse wire on the Hornby model.*

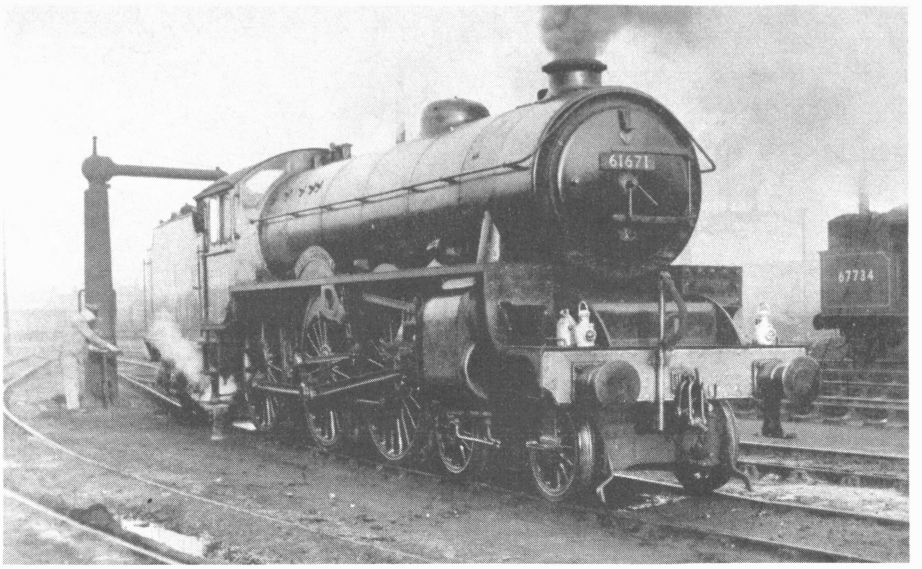
61637 Thorpe Hall *in November 1951 has the small GER tender and shows evidence of frequent cleaning. Note how the cables on the boiler side are lead differently from 61609.*

The nameplate Liverpool *was carried by B17 61664; the locomotive was built by R. Stephenson & Co in June 1937 and withdrawn from service in June 1960. This was the standard style for all 'Footballer' plates, the splasher side being in team colours.*

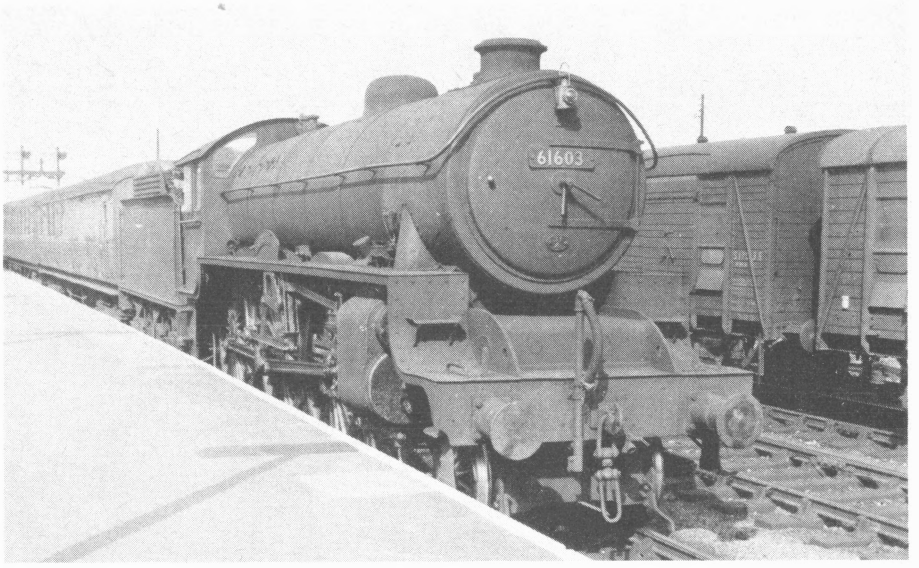
Framlingham *was named after a country house near Saxmundham, Norfolk. Locomotive number 61603 carried this name, the standard style for a 'Sandringham' or B2 class plate. As B2 rebuilds had only minimal splashers due to the higher running plate, a false splasher was fitted to carry the name.*

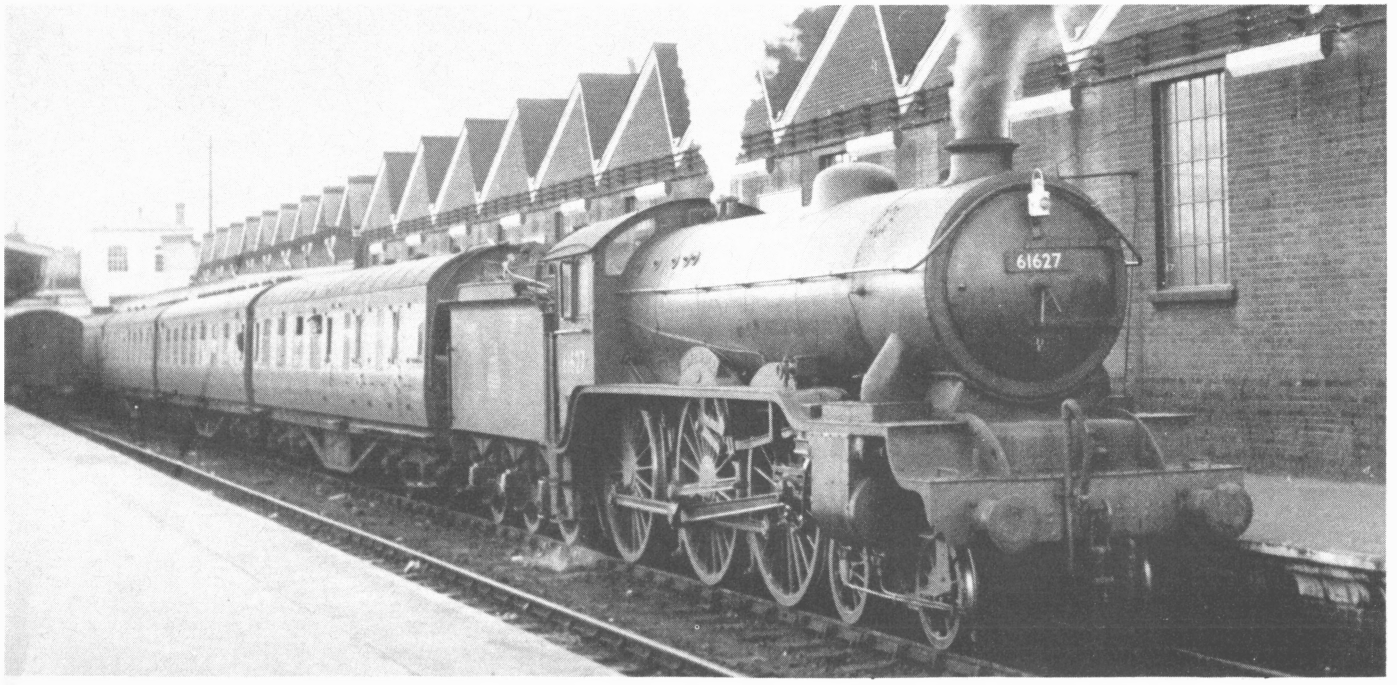
Right: *Unusually grimy at Cambridge on August 21, 1957, is 61603* Framlingham. *Built at Darlington works in 1928 it was later rebuilt (in 1946) to the condition seen in the photograph as class B2. Note the tender fitted is a NE design taken from a withdrawn class C7 locomotive.*

Below: *61627* Aske Hall *prepares to leave Cambridge with a local train on October 10, 1955, a typical 'Sandringham' duty. The coaches are ex-LMS and the usual small GER-type tender is attached to the loco.*



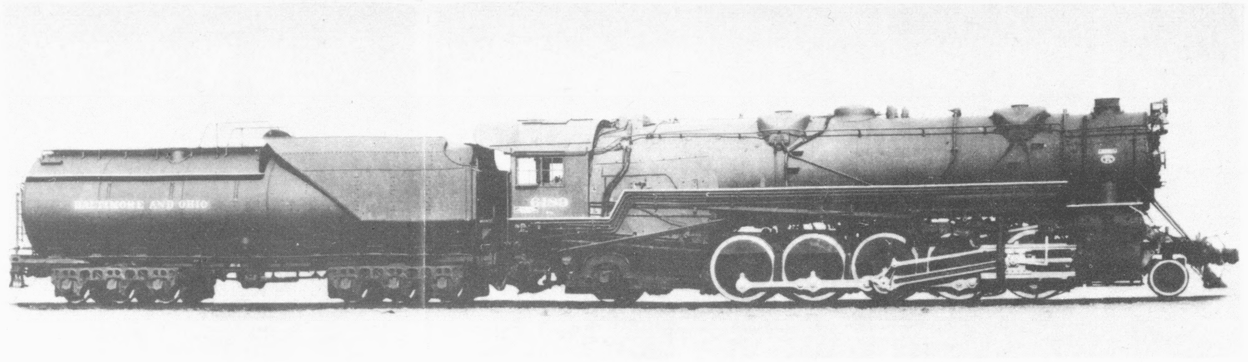
Pride of the line! Taking on water here is B2 class 61671 Royal Sovereign *being prepared for duty at Cambridge depot on November 14, 1951. This locomotive was fitted with a LNER 4,200 gallon group standard tender. 61671 was the official Royal engine stationed at Cambridge depot, and was always well turned out. Though painted in standard BR lined green, this locomotive retains the lighter green lined out wheel colours and lined buffer beam of the LNER era. Note oil can for lamps standing on the front footplate. The false splasher to carry the nameplate is well seen here.*





The 'Big Six' locos of the B & O

Dave Arnold tells the story of a classic American steam type well-known to modellers



Lima's official works photo of S1a 6189 on delivery. Motion and tyres are painted white for the photo, as are builder's plate and the edge of the running plate. Locos so painted usually ran in service like this until the paint wore off or was covered in grime (Blue Lines Collection).

During 1959 the Baltimore and Ohio Railroad Co issued condemnation certificates for sixteen of its remaining steam locomotives. Hardly unusual you might think – the diesel locomotive had been making steady inroads into the ranks of steam freight engines since the first FT appeared on the B & O in 1942, (note 1), but these sixteen condemnation certificates sounded the death knell of the last of the 'Big Sixes'.

The 'Big Sixes' were, more correctly, the Baltimore and Ohio Railroad's 2-10-2 (or 'Sante Fe' type) locomotives. The first locomotive with a 2-10-2 wheel arrangement was ordered by the Atchison, Topeka and Sante Fe (ATSF) in 1903. The engine was built by Baldwin and went into service in 1904. This locomotive type was dubbed the 'Santa Fe' Type because of its originators. The B & O RR decided to use the 2-10-2 type as power for its increasingly heavy freight trains and so the class S locomotive went into service in 1914. Baldwin Locomotive works were the builders.

These 31 class S locomotives were so successful in handling the heavier tonnage trains that an order for a further 75 engines was placed. These were slightly different from the class S and so were classified S1. All engines were nicknamed 'Big Sixes'. The derivation of this nickname is easily explained – they were numbered in the 6000s and they were *big*. The smoke box had a diameter of 94 inches – 16 inches bigger than the driving wheels on a GWR 'King' Class locomotive! The engine itself stood 15ft 5⅜in from the top of the rail to the lip of the smoke stack and was 10ft 11in wide across the cylinders.

The main differences between the two classes were:

	S	S1/S1a.
Diameter of driving wheels	58in	64in
Steam pressure	190lbs	220lbs
Weight	410,200lbs	436,510lbs

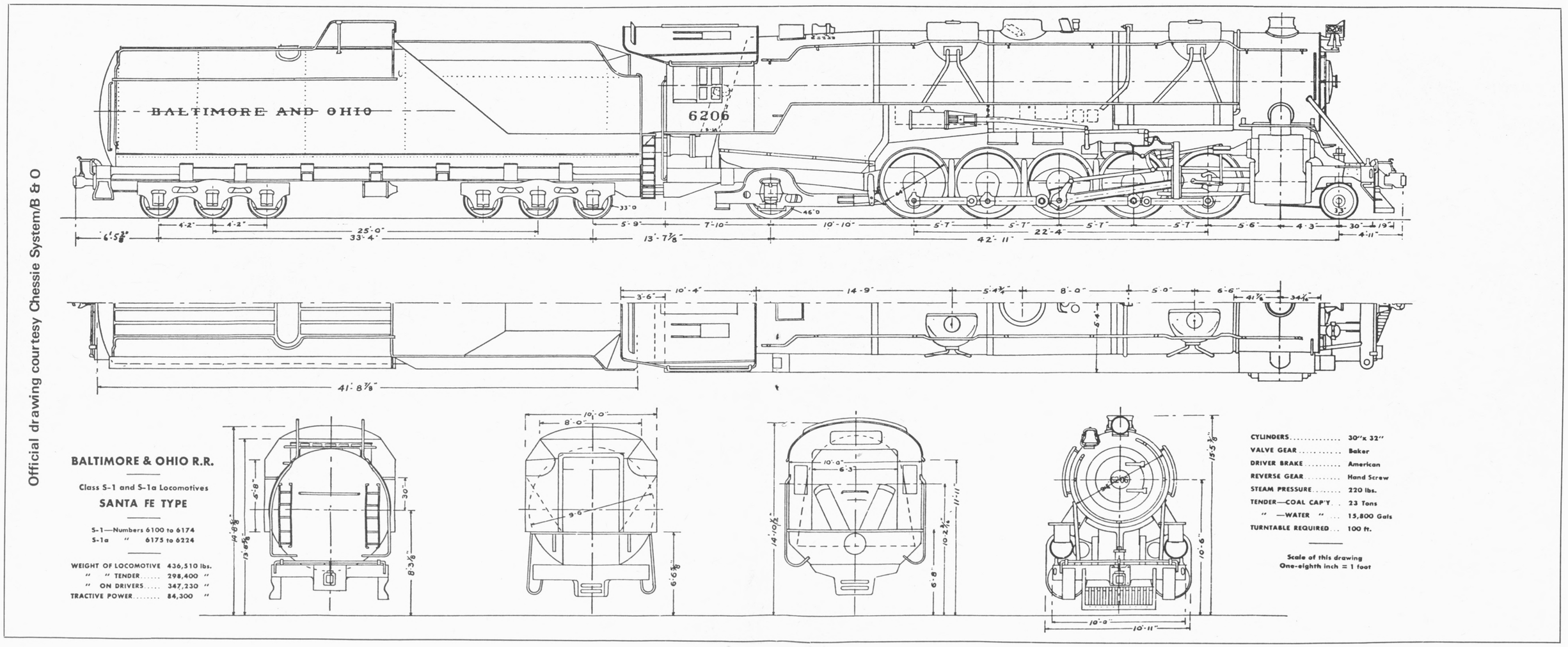
The S1 had a much larger tender carrying 23 tons of coal and 15,888 gallons of water, compared with the S tender's 16 tons and 10,000 gallons. The S tender was shorter, but was otherwise of similar appearance.

The S1 locomotives were built during 1923 and 1924. They were followed by 50 more engines, classed as S1a because of minor modifications to the dimensions of the large Vanderbilt tenders, but the class S1 and S1a engines were not visibly different from each other. All were coal-fired and equipped with mechanical stoking devices. Basic dimensions of the S1/S1a can be taken from the plan.

The construction of the S1 and S1a locomotives was contracted to two of the major builders of steam locomotives in the United States – Baldwin Locomotives Works and Lima Locomotive Works. Baldwin got the lion's share of the work and produced fifty S1 locomotives between October 1923 and January 1924. These engines were numbered 6100 consecutively to 6149. Lima supplied the remaining 25 class S1, numbered 6150 to 6174, in the early part of 1924.

The S1a engines appeared in 1926. Lima turned out the first batch of 25, numbered 6174 to 6199, and Baldwin completed the order with 25 more, numbered 6200 to 6224.

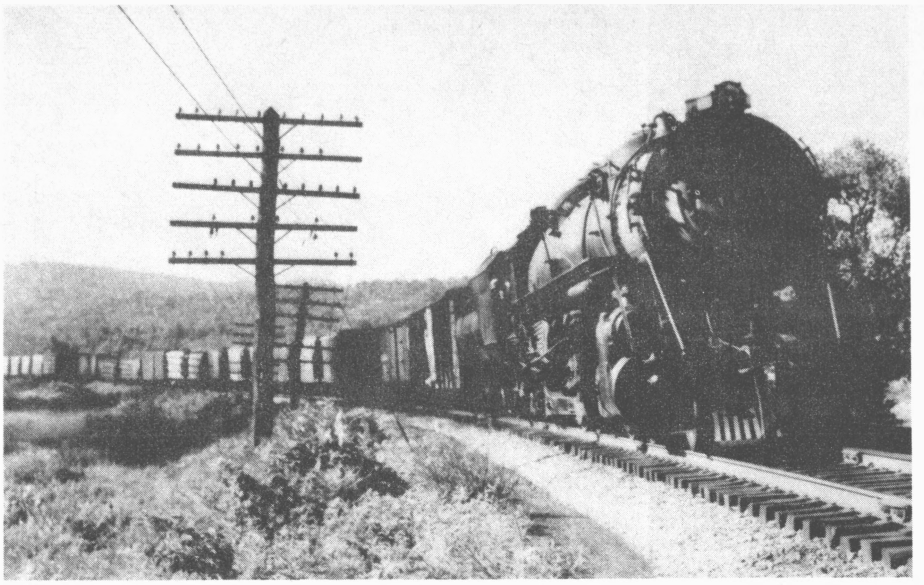
The S1 and S1a engines, despite a higher steam pressure and larger driving wheels, lacked the tractive power of the earlier class S locomotives. However, they were faster in freight service, being preferred where heavy freight trains had to be moved at speed. The engines were rated at 50mph, but this speed was often exceeded on the more level


BALTIMORE AND OHIO
6206
BALTIMORE & OHIO R.R.
Class S-1 and S-1a Locomotives
SANTA FE TYPE
S-1—Numbers 6100 to 6174
S-1a " 6175 to 6224
WEIGHT OF LOCOMOTIVE 436,510 lbs.
" " TENDER 298,400 "
" ON DRIVERS 347,230 "
TRACTIVE POWER 84,300 "
CYLINDERS 30"x 32"
VALVE GEAR Baker
DRIVER BRAKE American
REVERSE GEAR Hand Screw
STEAM PRESSURE 220 lbs.
TENDER—COAL CAP'Y. 23 Tons
" —WATER " 15,800 Gals
TURNTABLE REQUIRED 100 ft.
Scale of this drawing
One-eighth inch = 1 foot

Official drawing courtesy Chessie System/B & O

western areas of the B & O system.

The 'Big Sixes' also earned a reputation in helper service. The B & O has always had severe mountain grades to contend with, and heavy trains invariably had to have assistance surmounting these grades. One particular grade, known as Sand Patch (note 2) became famed throughout the B & O system as the home of S1/S1a pushers. In fact they were so successful as pushers on Sand Patch that they remained on these duties well after the coming of diesel power, in the form of EMD's FTs and F7s, had displaced the big articulated steam locomotives from the other grade helper stations. They finally succumbed to the GP9s in 1955. Though being essentially freight locomotives, the 'Big Sixes' in helper service were sometimes to be seen assisting the train diesels west of Cumberland on top expresses like the *Capitol Limited.*



On the head end of a long freight train, this is Baldwin-built SI 6135 around 1940 with the later standard modifications – note front steps for running plate, Capitol badge on smokebox door, and numberplate added below headlight. Head of front brake pipe is clearly visible (Blue Lines Collection/B & O RHS).

Modifications

The B & O RR was continually striving to improve efficiency and performance in steam locomotive design. Modifications became common practice on most of the locomotive classes they operated – indeed about the only thing excluded from modification was the distance between the wheels – 4ft 8½in!

The 'Big Sixes' were not exempt. Visually, the most common modification was the provision, on the left hand cab side, of an extension to the cab. This was provided to offer an enclosed seat for the head end brakeman. Specific dates for the modification would vary as it was probably applied when the locomotives were shopped for maintenance or heavy repairs. Certainly most photographs of the 1940s and 1950s era show engines with the extended cab.

The Vanderbilt tenders for the 'Big Sixes' were very characteristic and accentuated the heavy barrel shape of the loco itself. Originally they came with heavy six wheel trucks, but in later years it was not uncommon to see them equipped with four-wheel tender trucks.

Apart from these modifications, minor changes were made to many of the locomotives. Numberplates on the smokebox front were replaced during the 1940s and 1950s with the 'Capitol Dome' emblem. The number was then displayed on a small plate under the headlight. Some engines later had a stepped running board over the twin air compressors on the left hand side of the engine. The photograph of 6107 shows these minor changes quite clearly. At the front end proper ladders replaced the steps on the front of the running boards.

Four locomotives were rebuilt. 6108 was given a slightly smaller replacement boiler (from class S 6002) following a crown sheet failure in 1938. When it emerged from repair in 1941 a new classification of S1s was applied. No 6222 was rebuilt with a cast steel engine bed, lighter valve gear and had its air pumps mounted on the pilot deck. It was reclassified S1b in 1951. Nos 6105 and 6168 received similar treatment to 6222 in 1951 and 1953 respectively. Their new classification was S1c.

In 1957 the B & O had a general renumbering exercise so that the newer diesels could be integrated into the overall locomotive numbering system. As a result of this, the 39 remaining S1/S1a locos were renumbered from 500-53o. Two years later they were all gone. No 535 (former 6208) is thought to have been the last of the 'Big Sixes' to have actually had its fire drawn. It was used to provide steam for B & O's Riverside workshops in Baltimore in 1959-1960.

Summary of condemnations

Year	S1	S1a
1952	1	1
1953	24	12
1954	11	13
1955	10	6
1956	6	2
1957	9	2
1958	7	5
1959	7	9

So much for a brief outline of the prototype. Many modellers may own or have seen models of the 'Big Sixes'. What follows is offered to show their relationship with the prototype.

In N scale no commercial model exists at the time of writing for any of the B & O 2-10-2 classes. Anyone interested in having one would need to look closely at the commercial 2-10-0 chassis which are available and build the rest from scratch using information from the dimensional drawing printed here and photographs of the prototype. In O scale, the Westside Model Company have hinted that an S1/S1a may be in its programme for future production, so only patience or scratch-building is the answer here also.

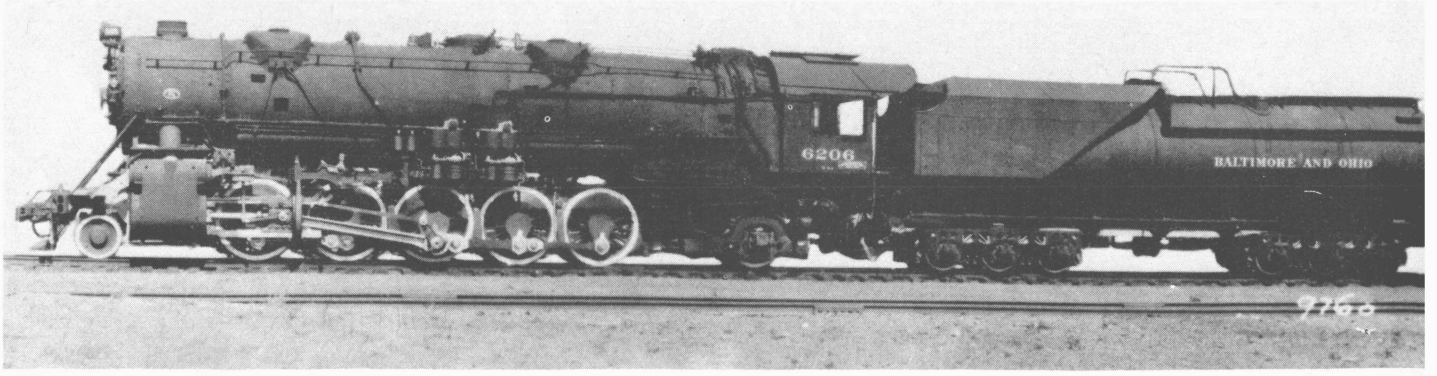
HO scale offers the best choice for anyone

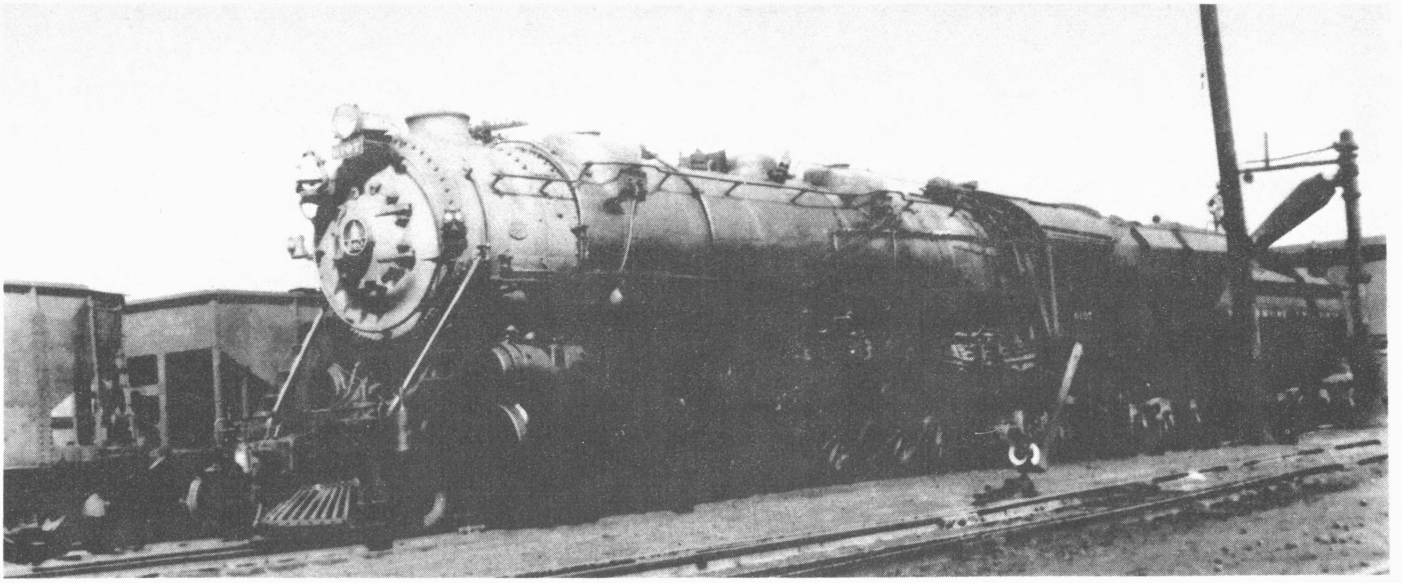
Notes

(1) See *Model Trains* Vol 1, No 1, for more on early US diesels.

(2) Sand Patch grade is on the B & O's Chicago line. From Cumberland (640 ft elevation) the line rises gently to Hyndman, the helper station (990 ft el.) The next eighteen miles to the summit rises at a rate of 67 ft per mile to 2190 ft an average grade of 1¼ % of curving trackage.

This is the official Baldwin Loco Works photo of SIa 6206 on delivery. The tyres have been picked out in white as has the builder's plate on the smokebox. Below the number on the cab is the class indicator, but the inscription below the last 6 is Baldwin's data panel, affixed temporarily for the photograph.





SI 6107, built by Baldwin, shows the standard class modifications of later years. Note extended cab side to provide seat and cover for head end brakeman/flagman, front ladders to running plate, walkway over air pumps, Capitol badge on smokebox door, and front numberplate. Smokebox front stays also act as handrails and on this engine (and some others) they were painted white. Smokebox has silver-grey graphite finish (Blue Lines Collection/B & O RHS).

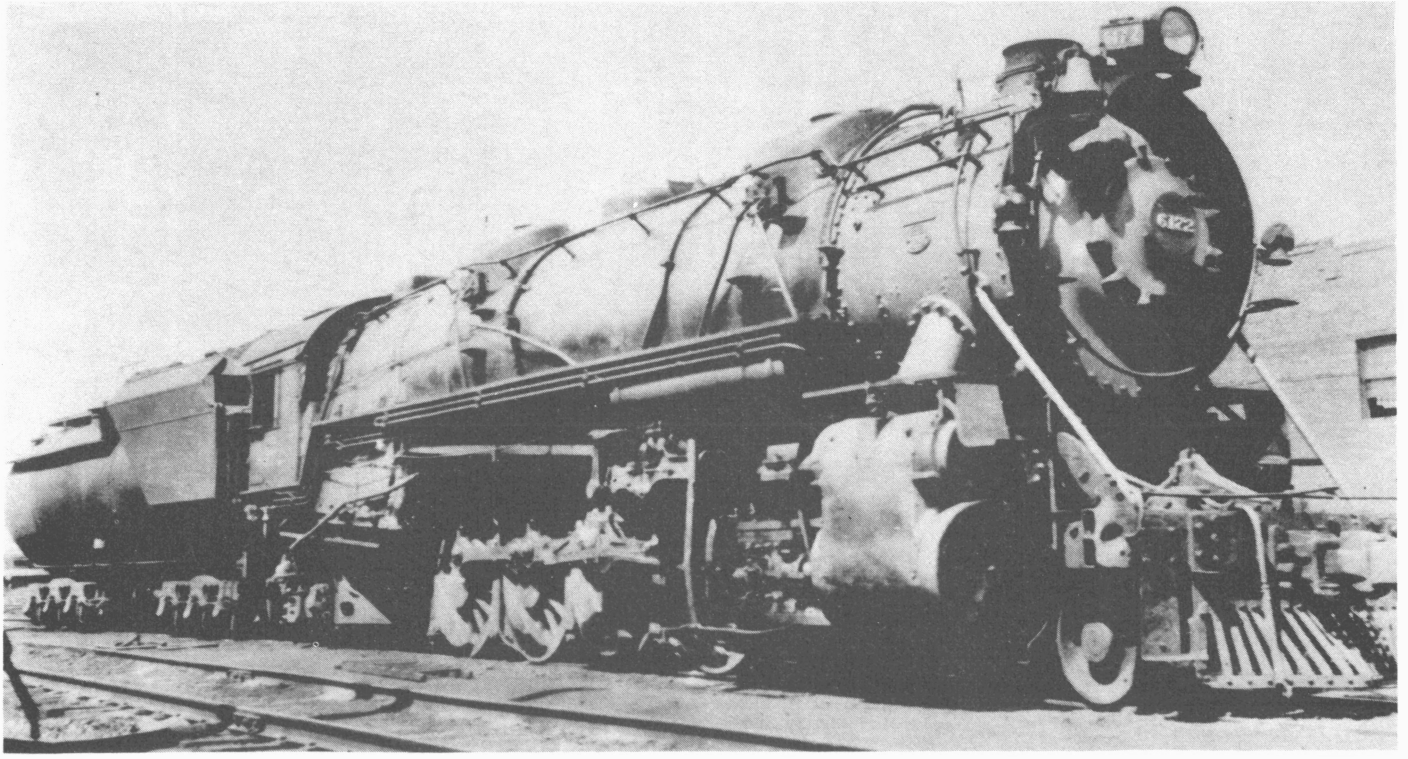
wanting a 'Big Six'. Two models have appeared in brass; the first was introduced by LMB Models back in the 1960s. None of these were imported into the UK due to the import quota restrictions then in force, although one or two may have been marketed under the Fulgurex label. This was a fairly good model of the S1 but lacked the quality lost wax brass castings available today. The second brass model came in 1977 from Westside Model Company. This was representative of the S1/S1a in later years, having the brakeman's seat extension on the left hand side of the cab and carried the 'Capitol Dome' emblem on the smoke box front. It also had a detailed cab interior. Modellers are more fortunate here because at least fifteen models were imported into the UK and often re-surface in the model shops specialising in brass locomotives. According to information issued by Westside only 801 models were produced.

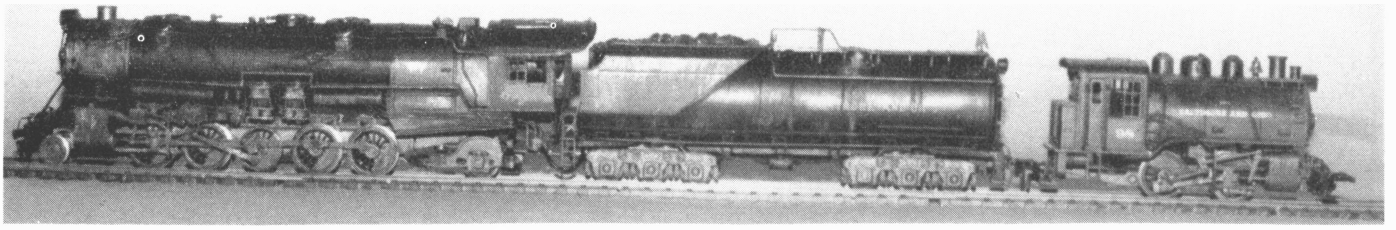
However, the most readily available model in HO is the Rivarossi/AHM version in moulded plastic. The original model was numbered 6206 and a builder's photo of the left side of the prototype is shown for comparison. (The book *B & O Power* shows both sides). The model represents the locomotive as built in March 1926, so anyone wanting to use it on a 1940s or 1950s era layout would need to research and perhaps obtain photographs of the engine to take account of possible modifications. The tender was remounted on four-wheel trucks at some time after 1930. No 6206 was condemned July 28, 1954.

Compared to photographs and plans, the model is pretty good looking and the parts all go in the right place. The lettering is done in white – certainly the one I recently examined was. However, B & O lettering was done in Dulux Gold (Dull Yellow) so this would need looking at in more detail. A new production run of the S1a has been made in the last year or so and this has had the lettering colour corrected to yellow. The number has been altered, too, to 6200, and the running plate has been edged in white, as often applied for builder's or official photos, but not shown in any 'in service' photos I've seen. Like other Rivarossi models, this one has wheel flanges which are too deep – European standards rather than NMRA. Therefore unless you can turn down the wheel flanges – a difficult job – you must stay with Code 100 track rather than the finer Code 70 type. The centre drivers,

Continued on page 432

SI 6172 was Lima-built and shows original condition with number on centre of smokebox door and single steps on running plate front. Smokebox is graphite painted – ie, silver-grey in colour (Blue Lines Collection).





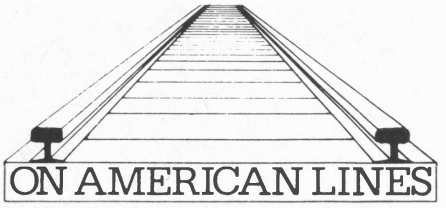
The long and short of the B & O RR! Here is the completed 'Big Six' model shown alongside the C-16 'Little Joe', affording an interesting contrast in both dimensions and wheel arrangement. 'Little Joe' is shorter than the water tank of the 'Big Six' Vanderbilt tender.

Working on the 'Big Six'

Chris Ellis suggests detail variations for the Rivarossi/AHM model

If you model steam American-style then it is worthwhile taking a logical view and collecting models which are compatible with each other in style and period. The Baltimore & Ohio is just one of several major US lines well catered for in miniature (UP, SP, and ATSF are others) and in steam models Rivarossi/AHM do a very good job in providing an inventory for the B & O fan. Previously I covered the C-16 and C-16a 'Little Joe' switchers which are ideal as a first venture into American steam. From these you can go on to bigger things, and you can't get much bigger than a 'Big Six'! To do a S-la justice you really need a big layout where it can stretch its legs with a long freight train, but like 9Fs and Black 5s in Britain, S-las were used in all sorts of places and you could fit one into a small layout, if only as a road engine making a fleeting appearance from the fiddle yard to take away a train which the switchers have made up.

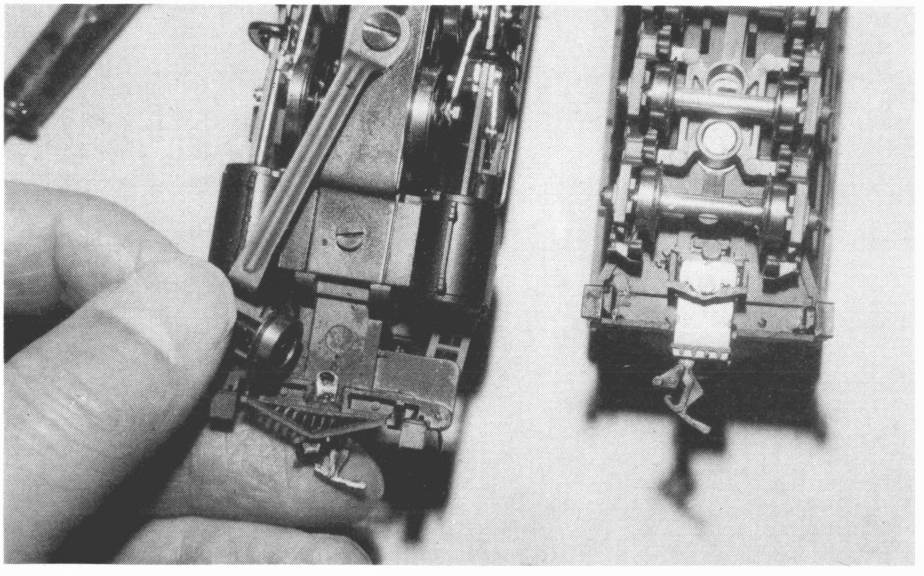
Even if you don't fancy American steam, the S-la is worth a look for it was an influential design with a big boiler and ten small driving wheels, a style which later became common and very successful in Europe in such types as DB Class 52s and 50s and BR 9Fs. The

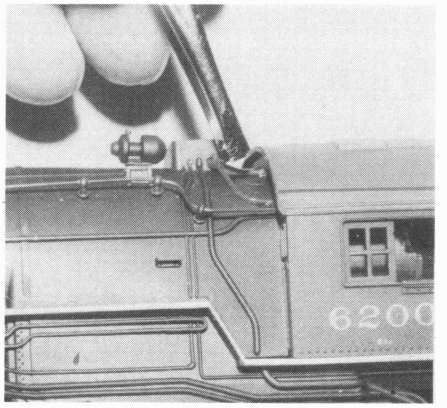


Rivarossi/AHM model is widely available, too, reasonably priced for its size, performance, and wealth of fine detail. Any store stocking Rivarossi should have the model – or they will be able to get it. As it comes it is a first-class likeness of a Baldwin-built S-la as it appeared in 1926 into the 1930s. All the dimensions are accurate, as is all the detailing, and the model was clearly tooled from Baldwin drawings to be as good as it is. Only the wheel spacing is very slightly adjusted, obviously to give clearance to the flanges which are over-scale in the usual model way. This does not effect appearance, however, for the discrepancy is only a few scale inches which is not really noticeable.

For an early 'Big Six' you don't need to touch the model loco, for it is fine as it comes, but all the tender modifications detailed here are necessary. On the loco itself just wield some black paint to paint

Below: *Fitting horn-hook couplers to match up with most American rolling stock. On the tender is a complete Lambert unit with its own sprung box, held by glue and a track pin. A spare horn-hook replaces the dummy above the pilot of the loco.*

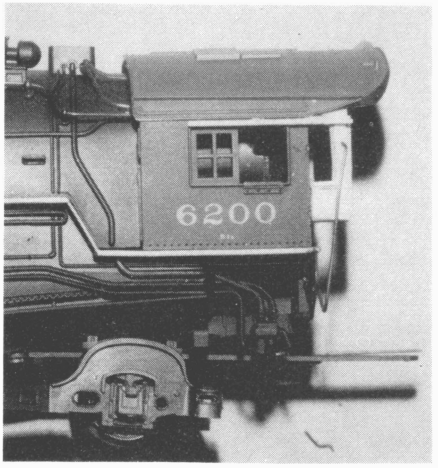




Above: *Missing from the model are the two little pipes shown here being glued in place leading into the cab. Microrod is ideal for these.*

out the Tuscan Red roof (and red areas on the tender), for although a red roof is a popular decoration on model B & O locos, it was rarely if ever done in real life, except perhaps for exhibitions or special photography. Similarly the natty white edging to the running plate can be painted out, but it could be left if desired as it was often applied for official photos and the tyres were polished up or also painted white on these occasions also.

However, I modified my model to the more common style of the 1940 period and later and the small amount of work involved gives an interesting variation on the Rivarossi original. Start with the tender which needs modifying even if you leave the loco in its original state. The Rivarossi model comes with a Märklin style European coupler and almost all models of American rolling stock comes with horn-hook couplers, or are fitted with Kadee magnetics. The Kadee coupler fits easily to the tender in place of the Märklin coupler, and you just need to cut away the lower part of the coupler pocket. I used a horn-hook, however, choosing the excellent Lambert type (available from Victors) which is well sprung and comes in a neat housing which will slide into the pocket on the tender with no more than minimum filing to ensure clearance. A pin through the centre hole, plus a touch of glue holds it in place. A brake pipe is needed to the left of the coupler, using guitar G string or a



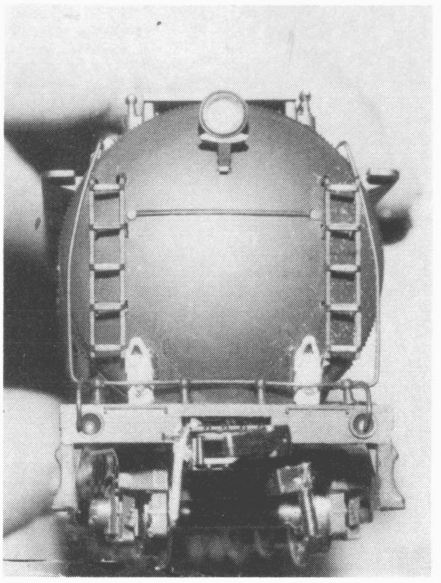
Above: *Here is the cab, modified left side only with an extended shelter for the head end brakeman/flagman. Note new handrail position, sill in new window space, and shade over full length.* **Right**: *Full-size template for the extension piece.*

purchased brake pipe as desired.

Underneath I added piping from the brake reservoir running under the trucks, then glued a rail from the right hand edge of the centre three underframe brackets, with two plastic card re-railing chocks attached. The pictures should make this clear. At the front end I glued a 15mm length of empty ball-pen refill to depict the shaft of the mechanical stoker. When the tender is coupled up, this will locate in the aperture beneath the cab floor. Then I cut two 20mm lengths of bell wire and drilled holes in the water tank floor midway between the steps and the underframe sill at the front edge. The bell wire is cemented in the holes and bent in a U shape so it comes up under the cab, so depicting the water hoses from tender to boiler. When coupled up these details look most realistic. The rigidity of the bell wire holds it in place – no need to attach to the loco.

Add coal in the tender and you are finished, but an attractive extra detail I added was a pair of red flags at the tender rear and two marker lights (Springside GWR type filed down); this arrangement depicts a helper engine for grade working (the back-up light is for tender-first running when the loco runs back down the grade). Two track pins with the heads cut off were ideal for the flag staffs, and the flags were cut from red paper napkins.

Now turn to the loco. The front end dummy coupler may be left, but for helper service you'll need a working front coupler. I used an old horn-hook left over from a kit, choosing one with a shank narrow enough to fit the pocket. The centre stanchion of the pilot rail holds the dummy coupler, and after lifting the rail to release this I drilled a corresponding hole in the horn-hook. Thus the pilot rail holds the coupler. The springing isn't too good, but it is good enough for double-heading

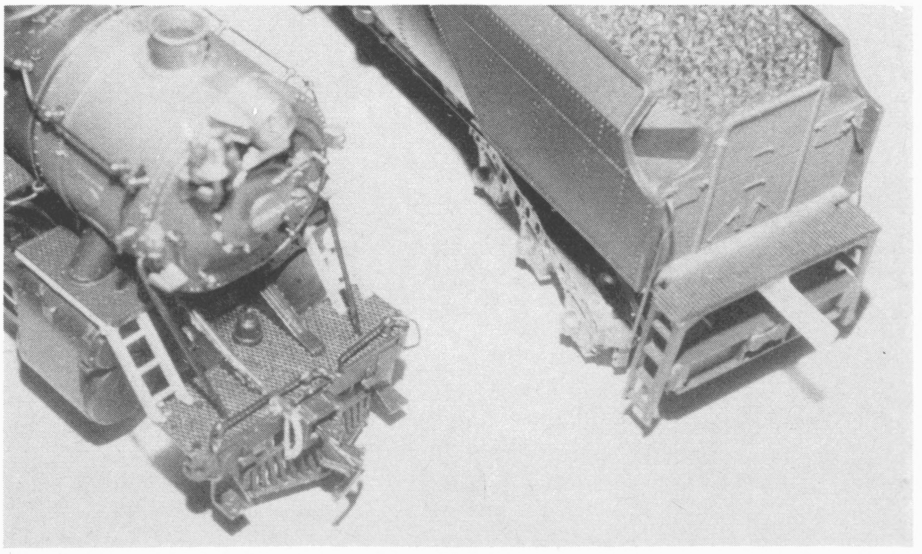


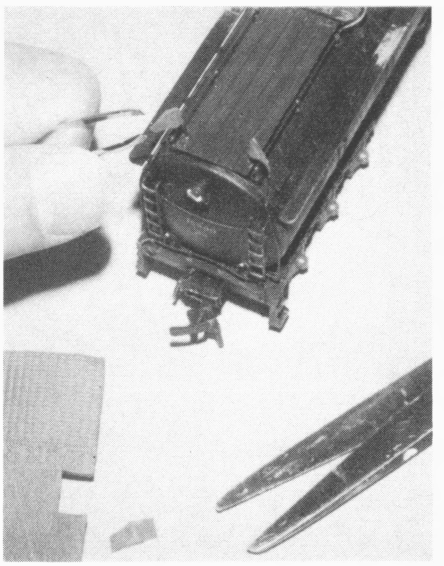
Rear end of tender with marker lights added and staves on catwalk for red flags. These are optional, for helper service locomotives only.

or for helper use at the back of a train.

At the front end I used Faller laddering (from the Faller building spares set) for front running plate steps, having first cut away the existing steps. A new numberplate was cut from plastic card and glued beneath the headlight. Microrod was used for the brake piping

Below: *Front end as modified on loco. New steps, number plate under headlight, new coupler, and front brake pipe and piping added. Front of tender has tube for mechanical stoker glued under floor.*





Above: *Adding red flags cut from red paper napkin or similar.*

coming out down the right hand frame top beneath the smokebox to the pilot beam where a cast brake pipe is glued alongside the coupler. On the left running plate I used scrap to make up a stepped section passing over the two air pumps. On the real loco the portion of running plate above the cylinders was actually raised about a scale foot and a vertical step was put into the running plate here. On the model, however, lifting this portion of the running plate would involve extensive re-working around the steam pipes, so I left it unaltered. Also I left out the vertical step section since this would have emphasised the slight error. It is not really a noticeable fault and, indeed, you might not have noticed it had I not pointed it out!

Now move to the cab end. Follow the diagram to cut an extension for the flagman's seat. An end and floor for this is needed. Take out the cab handrail this side (left), glue on the extension, then bend the handrail with pliers so that it will affix back on the rear corner of the extension. Cut 1mm plastic card strip to make shades above the cab windows, noting that on the left the shade also extends back over the flagman's window. Lastly cut a thin piece of card or plastic card and glue it over the moulded centre vent hatch on the roof, which will give the effect of it being raised. There are just two pipes to add to the 'plumbing', as shown in the pictures, and work is complete.

Now paint over all the amended areas, and take the chance to add some grime or weathering – these locos were rarely seen shiny! At the front end a Capitol B & O badge is needed on the centre boss of the smokebox door – I used one from a Walthers transfer sheet of B & O markings, but it could be hand-painted easily enough. Then put the number on the numberplate. If you don't succeed with these new markings don't worry over much for they were often quite covered with grime on the real thing. I used the new Polly S weathering paints which are excellent, though any acrylics or ordinary

Continued on page 432

New Street in 00 scale

How Don Jones built his massive outdoor layout which accurately reproduces Birmingham New Street and its train movements!

At the end of my first 25 years came that rare combination of opportunities that sometimes only happen once in a lifetime. I had got over the basic problems of setting up in business for myself. I had my own property and at such a time it is quite usual for modelling to re-enter one's life. Coupled to this, Birmingham's redevelopment was well under way, and with BR looking seriously at New Street Station came the incentive to take action and try the giant task of modelling New Street in 00 scale!

Taylor Woodrow's rebuilding of the station was about to take place. All the scale maps of the area were readily available. With everyone's eyes on the project came the inevitable aerial photographs, not just odd ones but a series of them for reference purposes. The only thing stopping me was the advice I received from fellow modellers. 'It can't be done! You're mad! Don't try it!' – very encouraging! As I remember it, only my near neighbour, Michael Richmond had any encouraging words to say, and indeed any faith in the project.

Well, a quick check with my critics soon showed that none of them had ever tried anything like it, and so with that knowledge I commenced work on the DMNS Railway. Don's Miniature New Street Railway is a project intended to fill the next 25 years of my life. Now after some 20 years of it, I can reflect on what has happened so far.

The first 3 years were spent collecting all the information possible; 20 feet to the inch maps of the station and its surrounding area were obtained. Experiments were made on construction ideas, firstly in the loft, but finally in an outside shed (with eyes very much on the garden). Gradually the required information was gathered together, a list of basic necessities was drawn up.

The layout, when completed, would need to do in miniature what BR was about to do in life size (if you model prototype then follow through to its entirety) and would require a full 24 hour working time table, while some 47 surrounding city buildings would have to be constructed, as a city station without them will lose its purpose and character.

Basic requirements were:

(A) A shed 40 x 20 ft. to house the station and fiddle yard.

Instantly recognisable to people, familiar with Birmingham. The renowned Rotunda Tower looming over the surrounding buildings.

(B) A garden layout to run the trains in.

(C) A controlling system similar to that of BR (Entrance-Exit to station).

(D) A great amount of stock to allow full length trains.

(E) A 25 hour clock, patience, concentration and love of the work involved.

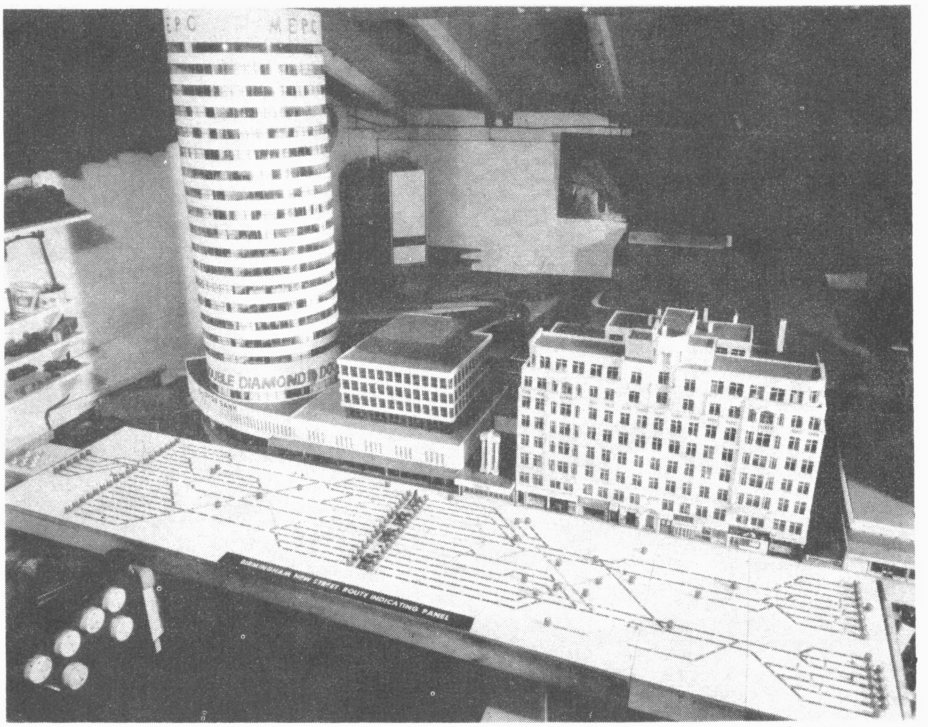
With such daunting ideas in my head, work commenced on the project. The station area was first to be completed and tested with the stock that was available at the time. For the current period that was not much and it seemed then that the only way to keep long rakes of coaches on the track was to nail them into place!

However, as the years passed by, things improved, and my own confidence increased with the appearance of better modern train models. (I did not anticipate then what marvellous years 1979-80-81 would be for the release of contemporary BR models).

Round about 1964 I was ready to put my faith in 00 gauge in the garden. It became quickly apparent that the talked about problems were rapidly disappearing, and so work got under way with what is now some 400 yards of outside track.

Two continuous running loops, both double track, were laid, depicting Euston-Wolverhampton (electrified) and Bristol-York. All stock running on the actual BR lines was noted, and a collection of models has slowly been purchased, still a continuing process, of course.

Birmingham New Street is the 'cross-roads' of the system and as a station it is everything wrapped into one. Through trains, terminating trains, commuter trains, connecting trains. They come in on all 4 tracks at both ends. Rush hours can produce up to 6 movements a minute, so if you throw a late one in just to confuse the pattern, you can begin to sympathise with BR even before the inevitable announcement. They have a saying at the real station – if there is a problem anywhere on the BR network, sooner or later the effects of it will pass through



The main control panel of the layout, showing the station area (centre) and the sidings, many of which are continuous running circuits. City buildings are impressive, part of New Street and the Bull Ring Centre can be seen.

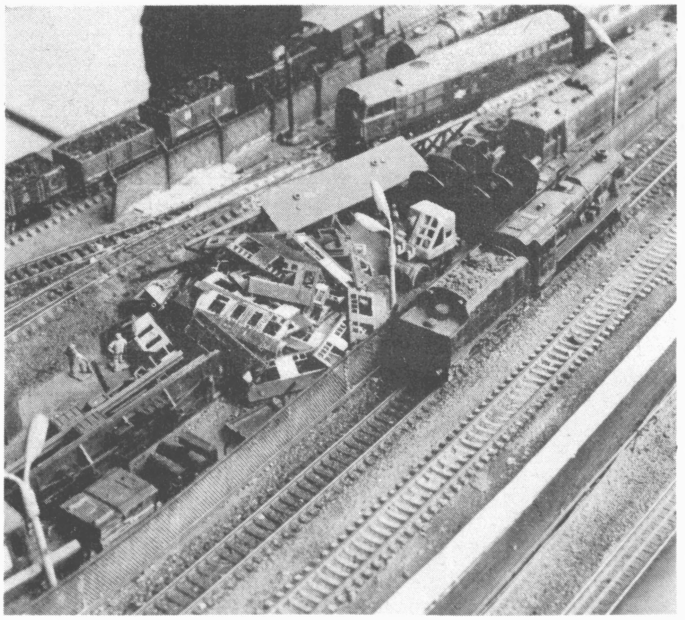
New Street!

The next part of the construction involved something of a chicken and egg problem. The fiddle yard had to be constructed in such a way as to accommodate all of the 823 different movements of the 24 hour BR timetable and no train could be blocked by another.

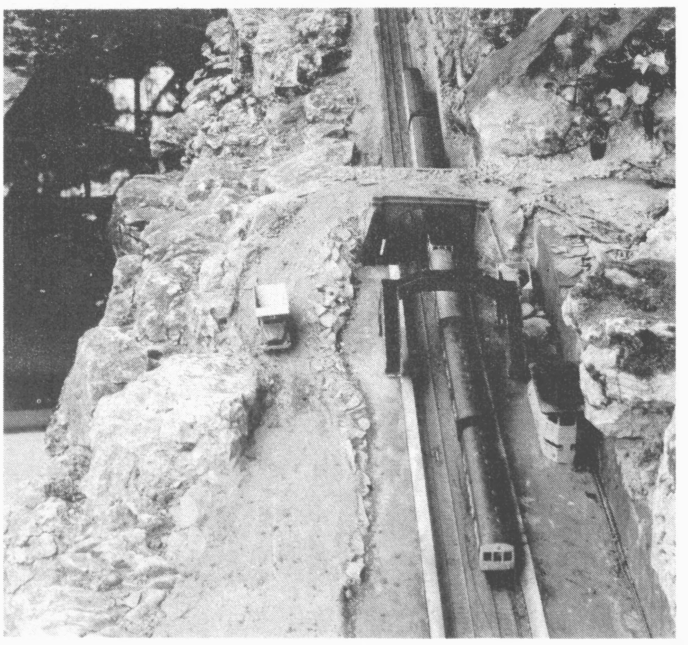
BR has no problems here, as trains enter the station area and leave again, becoming someone else's problem. However, for me this was not so, for each train promptly turns up in the fiddle yard alongside all those that went before and all those that still haven't even arrived yet!

The staff at New Street very kindly supplied me with the information of all moving trains and I promptly sat down for some 300 hours to convert their train movements into a coding system which would work on my layout. Sidings were made to accommodate the passenger trains and a marshalling yard constructed to represent all the parcel and freight areas within the station. The sidings were coded by letters of the alphabet and the marshalling yard by letter L and all trains that entered the marshalling yard then became part of its own timetable, operated by an auxiliary control panel.

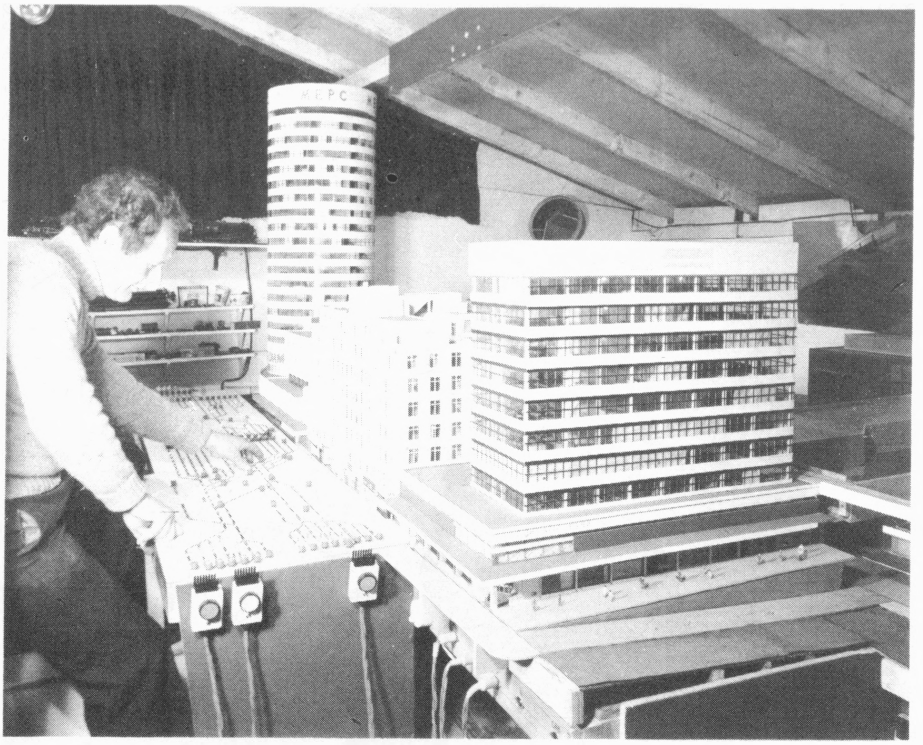
As there are four tracks at either end of the station, I number the tracks 1-8. Thus my own code for a train would possibly be C38A – C sidings, 3 track to 8A platform, and likewise a train arriving at the bend could read 2B5D. These are ficticious codes, but the ones I use tell me all the information



What happens to trains if you don't get the signals right! When modelling prototype, one has the same problems as BR – what to do with the bits. A scrap yard is an ideal solution particularly in the garden, where one does not even have to weather the materials to make them look tatty.



A race home. With the truck spiralling off down the track along side the train, the scene is reminiscent of many European railroads whose motorways often run parallel to the line.



A clear view of the Midland Bank complete with furnishings. Notice the pedestrians outside who actually look three-dimensional even though they are simply cut from card and are flat!

I need to know about the trains. 2B50 arriving from Wolverhampton to Euston, D38A departing to York, B411A cross-city DMU from Four Oaks or Lichfield arriving; 11B8B same DMU departing to Longbridge. As you see, the coding becomes very similar to the BR one, but instead of areas I have sidings, etc.

The station working timetable fills 37 pages of A4 paper and a further eight A4 pages are required for the marshalling yard. All this for 00 scale!

Well, as you will have realised, by this time I had tightened up my braces and attached them to my loin cloth and long since walked out into the wilderness. If you have ever trod that path yourself, you will know that most of the people you meet are pygmies in tall grass, and it is not much use asking them where you are! However, once in a while you meet a fellow modeller and so it was for me.

Robin Mathams, who was probably doing the highland fling too enthusiastically, must have jumped too high while in his kilt and with a north wind blowing, the first he knew about it was his landing in the tall grass, belonging to the pygmy tribes of the West Midlands. Robin came with all the ideas and capabilities to equip any model railway with the modern day entrance-exit system, also the ideas to equip a layout with a full 4-aspect signalling system, including overlap and approach control signals.

I well remember his showing me how far he had got with his experiments and true to his Scottish birthright, he had done a mock-up of the route lighting signals, buttons and theatre indicators, all working, would you believe, on an old cardboard box? I could not then understand how a cardboard box would connect with such advanced thinking. But I did realise that the DMNS Railway could use it and be more grateful.

It was at this point where I turned my attention to the electronics for the layout and with Robin's help an inspection of the layout took place and I was asked to strip the wiring out of it. Dutifully I did this, then asked what next. And so a partnership was formed. At least this littly pygmy had a tall friend who could see above the grass! Over the next year work progressed at a good pace. Firstly a CD unit was built, powerful enough to set 10 turn-outs at once any distance from the control panel. These could be 30 feet away and equally as far apart.

With the timetable having been already worked out, diode matrix units were constructed, tested and put into place. Some 2000 diodes have been used for the routes.

The control panel was next constructed. This is one of my pride and joys. The route of any train only needs two buttons to be pressed and any number of turn-outs up to 20 will be set into position. A lighting system displays itself on the panel to show the route is set. A further 1000 diodes were needed for this latter requirement (Micro switches have been used at each turn-out motor).

Next came the signalling. Four aspect signals in the garden and fiddle yard – 74 of them. These are fully interlocked with approach control signals at the approaches to the station and an overlap system on all signals so that the rears of the trains are protected by a second red signal.

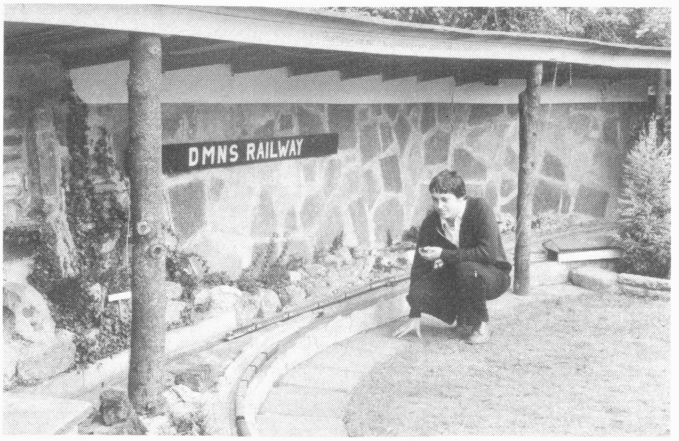
Then came the indicator panel which shows the paths of the trains as they travel round the garden. Watching this is a facinating experience and after a while one begins to gather information from it. While the trains are in the garden, they are out of sight to the operator, and it is important to know their positions particularly when they are re-approaching the shed.

I have constructed a second indicator panel for the drivers to control the Edinburgh-Bristol lines. They sit on the other side of the station to the main panel. The only time they see the trains are when they enter the station, otherwise they rely entirely on the visual panel to know what is happening. The complete circuit is some 100yds long with 11 signals. Thus, with the overlap system, one can watch firstly two red lights come on, then the next two come on, then shortly after the rear two go out, as the train clears the section, and so on.

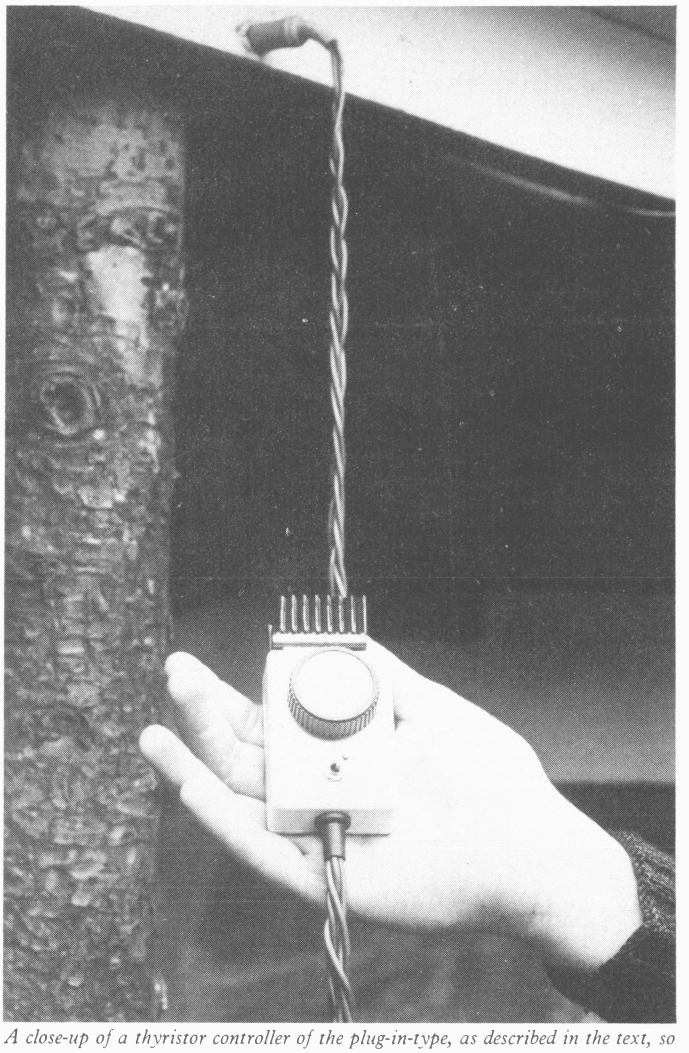
Added to this I have also placed reed switches in the track at photographic spots in the garden and also at the two outdoor stations, and with these it is possible to stop a train exactly where it is required without even seeing it. Thyristors and transistors are used in the circuitry.

All the work on electronics has been firstly experimental and then permanent. This

A shot from the top of the station showing the Multi-storey Car Park. There are not too many cars parked there – perhaps prices are high to go with the building!



Mark Davis when not working for BR drives the trains at the DMNS Railway. He is moving a train into position with a hand controller plugged into a ring main round the layout. Note the roofing which enables running to take place all the year round. Also the cover by the small tree, which is protecting the track against bird droppings and leaves.



A close-up of a thyristor controller of the plug-in-type, as described in the text, so that it is possible to control the trains and be outside at the same time.

Photos by Brian Monaghan

means that everything that has been done has taken at least twice as long as it needed to have done, and when working in the garden with such materials, you have to think in terms of years of experimenting before you can justify its existence. Such an experiment are the controllers. These have been purpose built for me by Brian Goldingay. They are thyristor controllers, capable of producing 6 amps and 12 volts at any part of the track. These will be able to produce the coach lighting which is now under test. They are plug-in type, and I have a ring main outside, so it is possible to control the trains and sunbathe at the same time.

I have written previous articles, which were featured in the *Model Railway Constructor,* May and June 1978. They gave more details of the construction of the layout up to 1977 and the many more reasons for building it. Much has happened since then, and so I feel I should not repeat myself too much but talk more about the last three years.

To give character to a city station, I felt its immediate surrounding buildings should be included in the model and indeed in the case of New Street, it is very hard not to include them to achieve the realistic setting. The Rotunda and Attwood House were to be my first efforts, and after much research, including receiving all the measurements from the architects and some 100 photographs of the shops, the building was finally completed and put on show. MEPC (the original builders) saw the model on television and promptly asked if they could purchase it. The thought of having to make another for myself shelved any ambitious ideas I might have had. Such buildings by their sheer size require to be built strongly, even in model form, and although a great deal of the model is PVC, Formica and ⅛inch ply, its weight is such that two people are needed to lift it.

Some 200 hours of work went into the Rotunda-Attwood house structure, and a similar time scale for each of the other buildings so far completed, they being King Edward House (New Street), the Odeon Cinema (New Street), The Midland Bank (New Street), the Inland Revenue Offices and shops (Navigation Street), the Guild Hall (Stevenson Street), and the NCP, Multi-storey Car Park on top of the station. Much of the road system is completed. All the buildings have lights (about 100 small bulbs in each one) and inside furnishings are also added. I make my own people by drawing them on card, cutting them out, threading a bead on to a pin and then passing the pin through the body and into the foot path. This way ensures the people stay upright, and they can be designed to look action-minded. The third advantage is that they can be removed and stuck in somewhere else. They also make excellent models in shop windows. A busy city centre will need several thousand people and this is the cheapest and most amusing way I have found. Surprising enough, though these flat card figures might sound crude the finished effect is most realistic.

To make long trains work correctly in 00 gauge takes quite a bit of juggling with stock. Eight or less seem to work quite well but ten or more give problems. Much experimenting with different makes has been done and fortunately, Airfix and Lima came out of it very well. Airfix MkII coaches are excellent, and these are backed up by Lima MkIs and their variety of parcel wagons. Coupling compatibility is the biggest problem. I found the answer by removing the hooks from all locos so they have just the pulling bar. Any coach which needs to automatically uncouple is modified as described in 'Let's Look at Couplers', May 1980 *Model Trains*, so that it is magnetic.

Magnets are placed in the track at any point where uncoupling is required. When the loco stops at the given point, the uncoupling of the stock takes place with a click. All hooks on the coaches have an extended arm soldered on, making sure that the arm when raised, will clear the loco pulling bar. With couplings that are not required to disengage, this latter requirement is not essential. The added length of the arm also helps to keep it in the down position and not jump about so much.

Although my original intention for the layout was for just my own pleasure, it became quite apparent that this was not going to be so. On the weekend of June 28–29, 1980, I opened the layout for the public. It took some 20 people to control it that weekend, and I would like to thank the members of the Sutton Railway Club for their splendid help. To become a driver on the layout, one needs at least 8 hours of experience and this was dutifully done by five people before the open days. Likewise stewarding was not just marshalling people about but being able to explain all the points of interest.

The idea was to have the visitors in small groups passing from one steward to another, and I can remember Eric Davis being permanently pinned to one position all day while he explained about the indicator panel. He was the only one I could see, for 1,500 people came from all parts of the country, raising £321 for charities. It is very nice to have so many people interested in the pro-

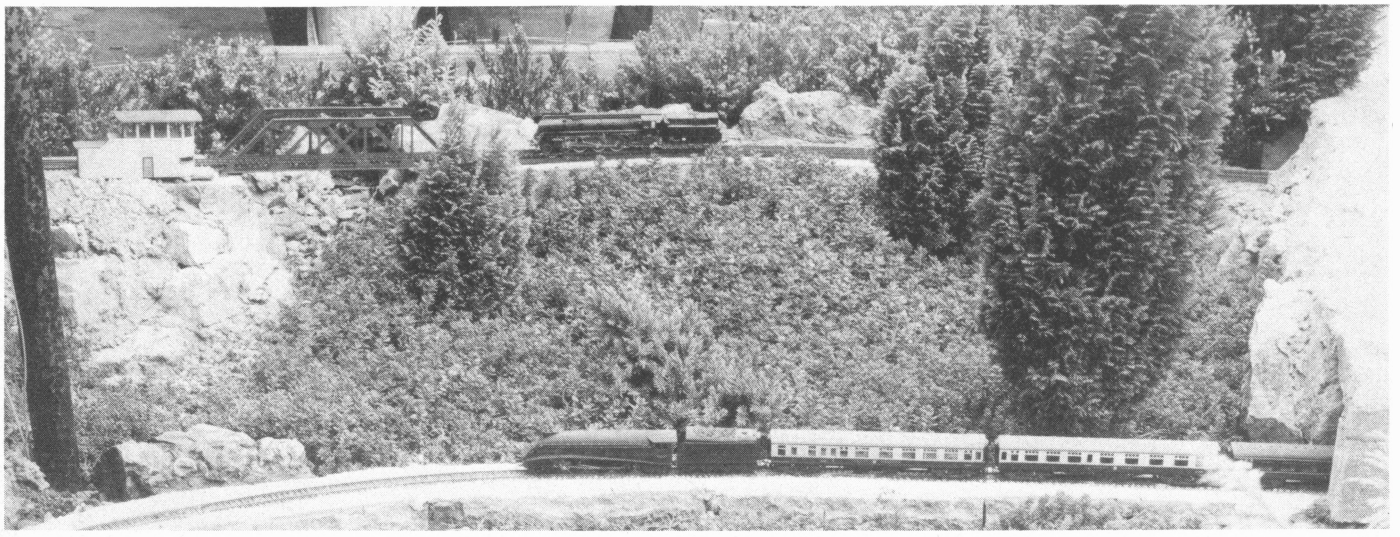
ject, but such events do slow progress of work. Each year therefore will see one open weekend, and some other days will be kept aside for organised parties and clubs in the future.

Since June last year the shed has had its roof raised, and a balcony built. Now people can see the station and city buildings from an aerial view, something akin to the view from the top of the real Rotunda. I have always had in mind to take opportunities to construct the layout with as many feasible different approaches as possible. Therefore it can be viewed from inside the rail circuits (thanks to garden paths crossing the track) and at various heights. Also the fiddle yard, if it can be called that, is fully scenic and operative (I hide as little as possible). This balance of effects can be achieved more easily with a large complex layout, but I see no reason why very small layouts cannot achieve the same result (I am opposed to hidden fiddle yards!).

If you want to see my layout for yourself, then come to this year's Open Weekend on September 5 and 6, at 32 Douglas Road, Sutton Coldfield West Midlands B72 1NG (Tel: 021-354-3744). Admission will be 30p, or 15p for children and OAPs. There will be a display of the New Street model buildings at the Sutton Coldfield Railway Club Exhibition at Dunlop Hall in March 1982.

I would like to take this opportunity of thanking all those people who have given help and encouragement. Without the assistance of British Rail the project could not even have started. The police kindly let me continue photographing and measuring doorways even during the bombings of a few years ago. The owners of the buildings involved, fellow modellers, visitors and Brian Monaghan all offered help and encouragement along the way, as does my wife Renate at all times.

If you are thinking of building your own 00 gauge garden layout on this sort of scale you'll need 1,000 yards of Peco Streamline track, 150 electrically operated turn-outs, 13 double slips, over 4 miles of wire, 2,000 diodes, and over 2,000 small bulbs – plus enough diesel locos and the rolling stock to operate over 800 train movements in a 24 hour sequence – including over 200 coaches and 60 locomotives and DMUs!



Trainlines

LETTERS TO THE EDITOR.

Pointwork

Firstly, please allow me to congratulate you on your excellent magazine which I think is a welcome addition to the other current journals on the market.

I have taken up modelling again after a lapse of six years and I am now in the process of building my third layout, which I hope to finish. This time my layout is of a larger size and scale and with some of the distances involved, manual operation of pointwork could give me problems. However as point motors are outside my financial resources I think that the wire (rod?) in a tube method would be an answer. Often in the past, when reading descriptions of peoples layouts this is the method usually suggested but I have never seen in print a step by step method of installation.

I am sure that such a guide, penned by one of your modelling experts, would prove to be of immense interest and extremely welcome to junior modellers and us older learners. I sincerely hope that time and space can be made available for such an article to appear on your pages.

C.P. Town, Aylesbury, Bucks.

We'll try to cover this as soon as possible, but in the meantime if anyone has any original ideas on mechanical operation of turn-outs, other than the rod and tube method, please let us hear about them. **Editor**

Southern Greens

I have only just been introduced to your magazine and have thus come in on the middle of the correspondence about Southern Greens. I was very interested in Mr D. Mills' letter in the May 1981 issue, and agree with most of his views.

I first saw Malachite Green just before the war, when amid the general olive green I was startled to see *Blundells* ('Schools' Class) in this vivid blue-green hue, which I thereafter referred to as 'jade' in my notebooks. After the wartime black the SR began painting its principal classes in Malachite Green again with some smaller types, eg, 30119 the Royal engine and 676 used on empty stock at Waterloo. After nationalisation there was no immediate change, and BR soon announced that all of their electric stock would be green; one reason being that most of the stock already was that colour so malachite continued and spread; I heard a man at Wealdstone station remark that 'They are now using SR trains on this line,' on seeing the Southern colour for the first time. Although carmine and cream was adopted for express steam stock, the Southern Region contrived to keep about 50% of its coaches malachite, by retouching and revarnishing. One could see coaches with mixed BR Gill Sans and SR 'sunshine' lettering thus treated until the mid 1950s.

My contention is that there was no *new* BR green at all until about 1956 – roughly the time that non SR stock reverted to maroon, and SR stock was allowed to be green officially. At this time the malachite was *slightly* darkened (as if by the simple addition of a little black) and thus it continued until superseded by blue and grey.

Incidentally under the SR and in early BR days, PMVs and even humble passenger stock were painted olive, the 'Olympia Flyer' being a good example. The olive was later replaced by standard carmine, and in 1956 by the new dark malachite, so PMVs were never finished in true malachite.

Malachite always seemed to me to be too flashy to suit locomotives of conventional outline, though it looked more at home on the air-smoothed Pacifics, where it corresponded to the garter blue and silver grey of their LNER counterparts. The Science Museum model, to which your correspondent refers, always seemed too dark to be true malachite, and was nearer to the 1956 shade; from what I have seen of pictures of the restored 850, I would say the livery is very accurate.

John Reed, Aylesbury, Bucks.

4F in 0 gauge

You kindly mention the article by the late John Hart on converting a 4F to an ex L & Y F19 0-6-0, in our fourth gauge 0 Guild Handbook still available at 93p, inc. p & p, from our Membership Secretary, Pat Honey, 7 Sawmill Cottages, Black Park, Slough, SL3 6BP. Detailing the Lima '33' diesel Bo-Bo is also in it.

Over the 4F the article deals with the major discrepancy, the boiler skirt, remaining on your otherwise excellent conversion job. Plastic waterpipe 1½inch outside diameter was used with complete success, being cut to

marry-up with the boiler above the skirt which was removed. One pipe would do several locos! Full details appear in John's article, which complements your own admirably. He also springs buffers (not difficult), and separates wire handrails and knobs (not expensive) which help greatly, also.

Fretting out the spokes on loco and tender is not difficult. John Hart used a MSC. Models chassis which is advisable for a loco expected to do heavy work, but on the F19 he used the original Lima wheels in the new chassis. Over time and, I suspect, the tremendous work the engine put in on his famous Midland & Southern Counties Joint Railway, we found the plating on the wheel treads began to wear, but not evenly, and not on all six loco wheels. Modified or new nickel silver coupling rods are a vast improvement.

As for other conversions, which provide a transition to scratch-building in an easy to handle material, John Hart built an ex-GCR, LNER J10 0-6-0, and a 4F like your own. Before his untimely death in 1979, he was planning to do two versions of a M & S.W J.R. 2-4-0! Taking the hint, I've begun a NSR, H class, Belpaire, 0-6-0. Others could be tackled such as a SR Q 0-6-0 (but beware of the taper boiler), even a 'S' class 0-6-0ST from a 'C' 0-6-0, SE & CR. Careful perusal of diagrams and drawings will leave a modeller with work on a whole stock of potential Lima conversions at a very modest cost. Gauge 0 Guild meetings have certainly shown many ingenious conversions.

Weighting is desirable with lead or Plasticine, but if using the original chassis and motor I would advise against over-doing it.

Martin Bloxsom,
Series Editor,
Gauge 0 Guild Handbooks.

Thanks for this useful supplement to my article. I did the minimum I considered necessary to improve the model and avoided structural changes. Hence I left the boiler skirt alone, for the aim was to show only work that was well within the capability of even the novice or inexperienced modeller. As my article implied, however, you could do much more in the way of chopping and detailing to the extent even of making or fitting a replacement chassis, depending on personal skill, outlay, and time available. The Guild loco book mentioned is useful to all starting in 0 gauge. **Editor**

Trams again

A little belatedly I write to congratulate you on your special tramway number in March.

I have been modelling 00 scale trams for several years now, some scratch built and some kit built, and an article about my early efforts appeared in the *Model Railway Constructor* for May 1969. The enclosed photographs taken several years ago may be of interest to readers.

I have often thought it would be a good idea if Airfix were to produce a model tram kit. I am sure that they would sell as well as some of the other kits.

B.O. Silverton, Coulsdon, Surrey

Additional Information

In your article 'Focus on the LMS Crabs' there are a couple of minor technical points that require correction:

(1) The cylinder relief valves – there were no single valves in fact the original design as shown in the photograph of 13070 on page 196 proved so difficult to maintain that the later batch of cylinder castings had the flange for the single relief valve (similar to that of the Fowler 4F 0-6-0) on the front of the block ie. it is hidden under the vertical footplating just forward of the cylinders. The recess that remained, best seen on 42753 on page 198, merely housed a lubricating oil pipe connection to the cylinder. As locos were fitted with new cylinders they naturally became like 42753, and the fitters at Cricklewood (where I served my apprenticeship) heaved a sigh of relief when one of our 'Crabs' returned from Horwich with new cylinders!

(2) The outer cab side window slid forward, it did not 'drop' as the text to the photograph of 13244 at the top of page 197 infers.

One final point, the photograph of 2825 on page 196, with the numbers and 'LMS' cleaned – I would hazard a guess that this loco had recently had minor attention at Horwich, either a 'casual' or an 'intermediate' repair which did not merit a full repaint. It was customary to 'touch up' the numbering in this way and to repaint the front and rear buffer beams red. Good luck to *Model Trains*. Your different approach is good for the hobby.

A. Swain, Wembley, Middx.

Thanks due?

My thanks are due to Vivien Thompson. Her article in the edition of May 1981 has given me a splendid idea for converting a spare garden spade into a much-needed extra modelling knife. I shall only need to replace two parts – the blade and the handle!

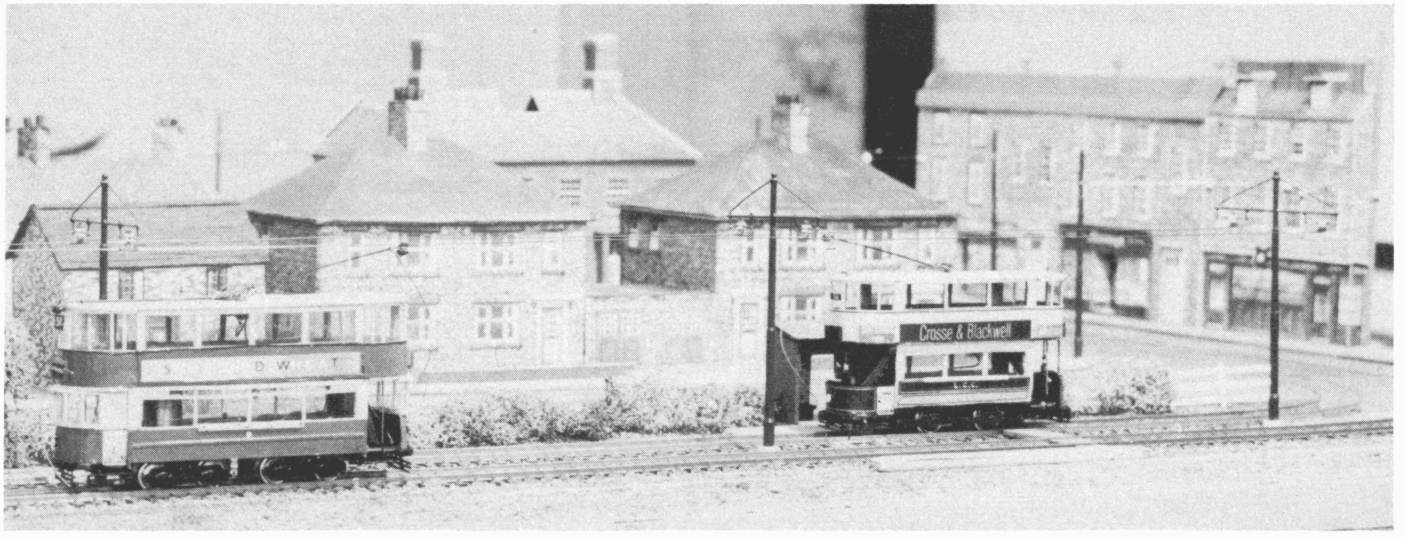
Paul Dann, Camberley, Surrey

You might feel a little sarcastic about the work involved to make a 'C' class loco the way Vivien did it, but her way has the advantage of being inexpensive – no more than the cost of the 4F and the plastic card. Vivien mentioned spare items she used from the scrap box merely as a guide. It doesn't imply you have to buy a Wrenn tank engine just to get a dome, chimney, and smoke box door. As we pointed out last month if you have no spare item to suit or adapt you can buy cast parts. **Editor**

A tip-off

A useful hint for railway modellers which I have not seen mentioned anywhere in the press, is a paint product called Polytex. A texture coating, this seems to me to be suitable for nearly all scenic projects and is ideal for ballast, rocks, grass etc. It is available in a variety of different colours, including white which can be overpainted very easily.

I hope that this snippet of advice will be of



Examples of Mr Silverton's fine work, modelling trams in OO scale.

some help to the railway modeller. I might add that I am a tinplate worker and not a sales rep for Polytex!

L. A. Lovering, Winch Wen, Swansea

Collectors Items

With the very limited availability of some of todays RTR 00 Locos (in terms of time, not production) I started to think about current production locos which will be much sought after collectors items in 10 or 15 years time.

It's not as daft as it sounds. It isn't all that long ago that you could buy the latest 2 or 3 Rail Hornby Dublo or Triang railway item off the shelf . . . and now look at the prices! How many 3mm modellers frantically search jumble sales and flea markets for Triang TT items? I could add to the list other items such as the pre-war Hornby clockwork, Twin Trix, etc, etc.

As a genuine low budget modeller interested in running trains rather than 'cheque book' collecting, it grieves me to see how a few model railway investors are ruining it for those of us searching for out-of-production models to use on our layouts, rather than wrap them in cotton wool and watching the value rise. It is 4mm scale speculation that creates artificially high prices.

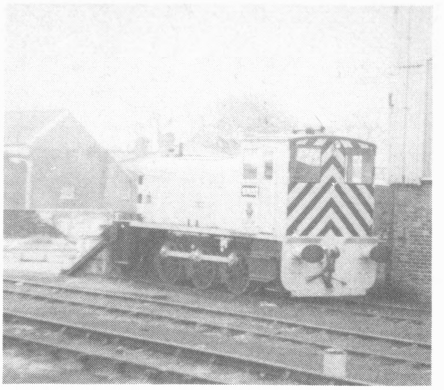
As a case in point I recently bought a Dublo 0-6-0 Tank and a Triang 51XX (with smoke) for £4.00 each from a fellow modeller who was giving up the hobby. A fair price I believe, yet a few weeks ago, I saw examples of the same locos in similar condition on sale for £20.00.

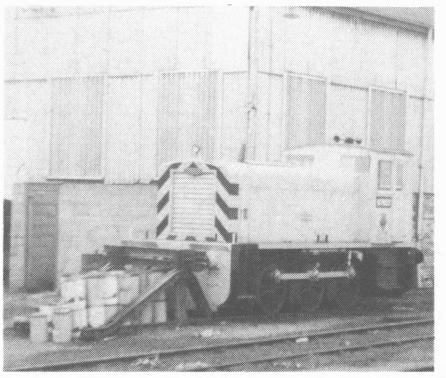
I have always felt that our hobby should be about running model trains for pleasure rather than for investment. Perhaps you should do an article on collecting model trains with a rough value guide to give people an idea of what they should pay.

Finally, a tip for all novices and low budget modellers. Model early BR instead of the 'big four' as RTR models can often be picked up a lot cheaper than the same model in, say, GWR finish.

Nev Fadrics, Oldham, Lancs.

Fortunately how modellers spend their money is their concern and if you prefer low budget modelling, model railways seems to be one of the few hobbies where it is still genuinely possible – compare ready-to-run loco prices with radio control equipment of all sorts, for example. Personally I prefer active running and modelling of trains, but there is nothing to stop collecting of mint items if that is what you prefer. Indeed it is just as well that some people do it to remind us of the legacy of the model railway hobby. I must agree, however, that prices asked for some quite mundane old items now verge on the ridiculous. **Editor**

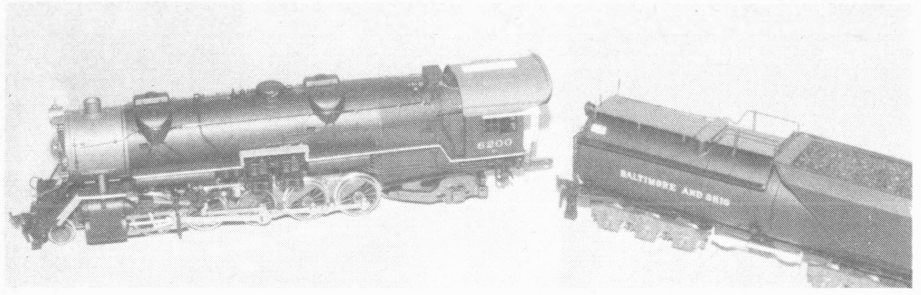


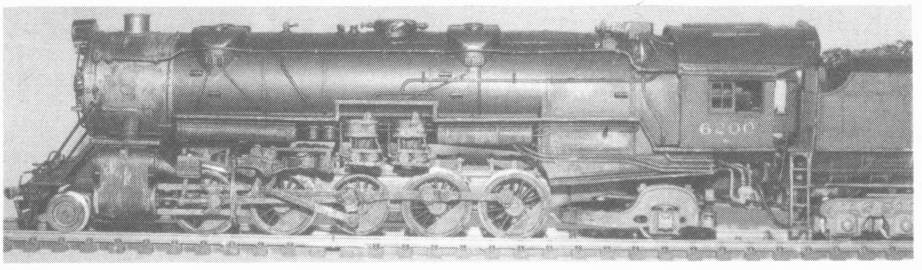


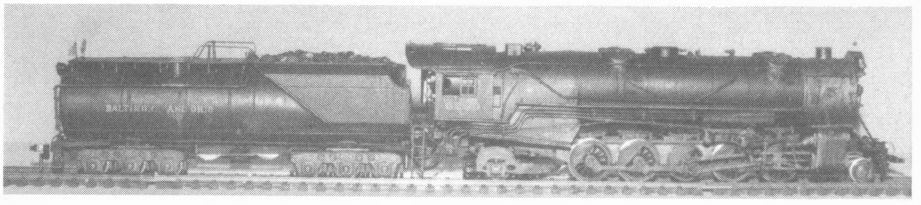
Bright yellow diesel shunters have often been produced in model form. Now BR are catching up with the model manufacturers and some small locos are being turned out in Rail Yellow like Class 97 97 6652, a Ruston & Hornsby 1953-built veteran used at Taunton PWD. End stripes and number panel are black, BR logo and maker's name red (photos by Matthew Ellis).

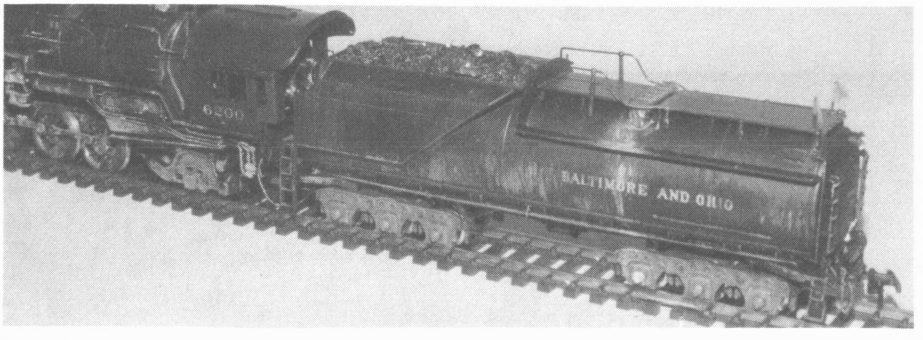
Modelling the 'Big Six'

from page 425









enamel paints can be used for weathering.

That fine reference book *B & O Power* (Stauffer Publications) includes many good pictures of 'Big Six' locos.

Top Left: *Model before painting, showing all changes. Note 8mm × 3mm 'box' added each side, rear of tender, and re-railing chocks below tender frame.* **Lower left**: *Views of finished model. Note water hoses from tender to loco.*

'Big Six' Story from p.423

you'll note, are flangeless. This correctly reproduces a feature of the real thing, intended to help round sharp bends, just like the model!

I should like to thank the following people for their assistance in the compilation of this article: Jack Amerine of the Baltimore and Ohio Railroad Historical Society for providing the photographs from the Society's Blue Lines Collection. Howard N. Barr, Snr, for providing the detailed information about condemnations from his comprehensive records of B & O motive power. John P. Hankey of the Baltimore & Ohio Railroad Museum. Chessie System (now parent company of the B & O), for permission to reproduce the S1 diagram. Bill Eaglesham of M.G. Sharp Models for information on the S1/S1a brass models.

Further reading

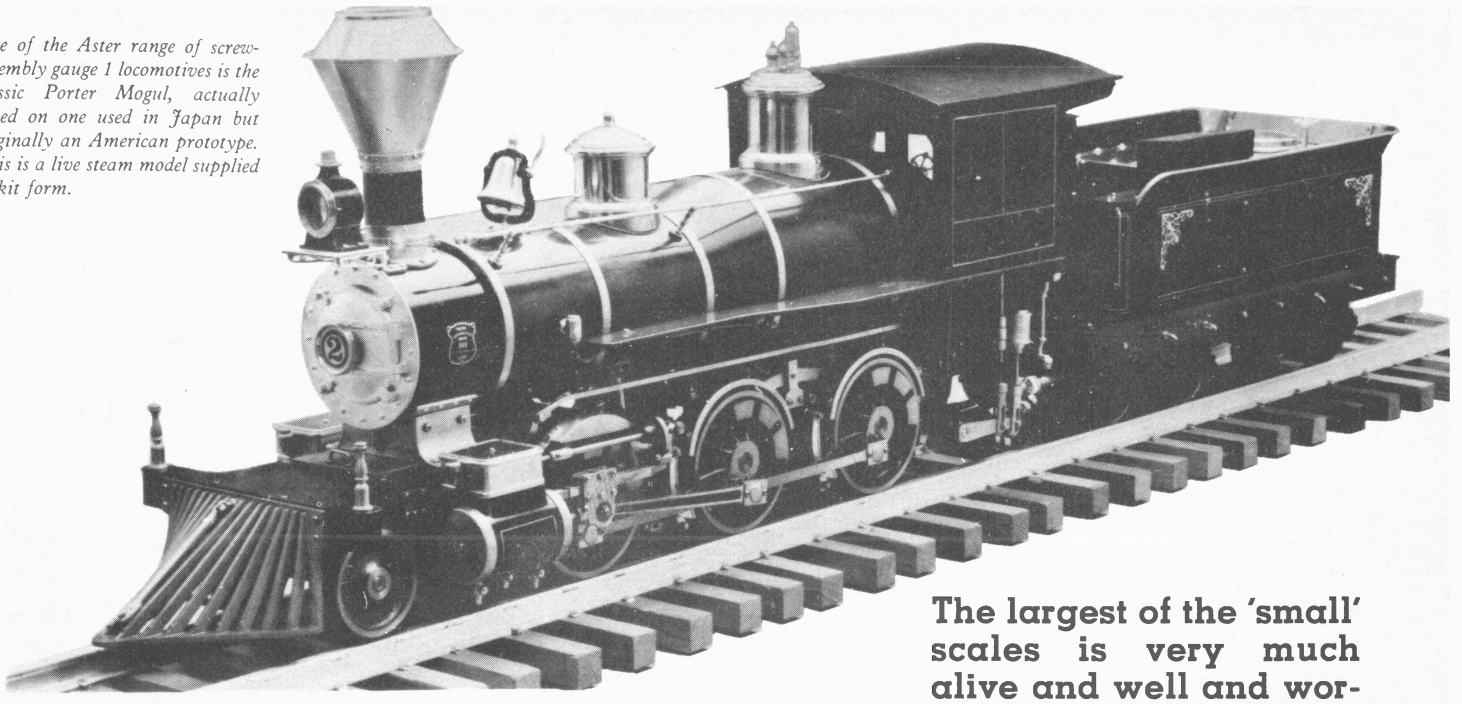
B & O Power, by Sagle & Stauffer (Stauffer Publications).

B & O Heritage by Krause & Krist (Quadrant Press).

A Royal Blue Heritage by Don Wood (Audio Visual Designs).

50 Best of B & O (Vols 1 to 5)

Five photo collections by various people with some good close up shots of 2-10-2s in action. Published by (Barnard-Roberts).



One of the Aster range of screw-assembly gauge 1 locomotives is the classic Porter Mogul, actually based on one used in Japan but originally an American prototype. This is a live steam model supplied in kit form.

A look at Gauge 1

The largest of the 'small' scales is very much alive and well and worthy of your consideration—here's our survey of the current scene.

Back in the early 1890s when the toy train industry was in its infancy, gauges were rationalised enough to indicate relative sizes of the models. Gauge 2 was popular, but gauge 1 became the most widely produced because, even in those days there was a move to more compact systems (and the even more compact gauge 0 was appearing by 1895). But gauge 1 was *the* system of the 1890s and the period up to World War 1, with Bing, Märklin, and Carette as the big names, all from Germany, all in tinplate, and between them offering live steam, clockwork, and electric propulsion. The top models of the 1900s were good replicas (for the time) of actual prototypes. Bing made models specially for the UK market which were distributed by Bassett-Lowke and branded accordingly.

The scale for gauge 1 models was established as 3/8 inch to 1ft (1:32) or, more commonly, 10mm to 1ft (1:30). In this size these are so close visually as to be virtually the same thing, and gauge 1 is usually referred to as 1:32 scale. Even in the 1890s the trade was very much aware of scale proportions, and so presumably were the customers, for firms in the accessory business kept to the model railway scales. Today's most popular scale for model soldiers, 54mm (1:32) owes its origins to model railways (not many model soldier enthusiasts know that!) because the firm of Britains produced soldiers, farm animals, and other toys to match up with the gauge 1 railway sets. In their hey-day Britains produced a big range of railway figures for gauge 1 including luggage, passengers, train crews, station staff, and platform machines as well as the huge farm series with many vehicles, buildings, animals, fencing, and much else. Britains still produce the farm series to this scale, though now in plastic, and the models are familiar in toy shops.

So much for early history. Gauge 0 eclipsed gauge 1 during the 1920s as the most popular scale and 00/H0 eclipsed gauge 0 in the 1940s/1950s. But 1:32 was so firmly established as a scale in its own right that there are many plastic kits of vehicles, etc, and hundreds of scale figures still being sold to a model market quite separate from the model railway field. Gauge 1 models were being produced commercially until World War 2, but few if any models survived for the post-war world, and gauge 1 looked like disappearing. However, in 1947 the Gauge 1 Model Railway Association was formed and this has thrived ever since with a membership which is currently growing and an output of key accessory parts available to members. More on this later. Just now gauge 1 seems to be very much at a new dawn and one of the noticeable trends at the 1981 Toy Fairs was just how much there was available, or coming soon, to encourage interest in this classic traditional scale.

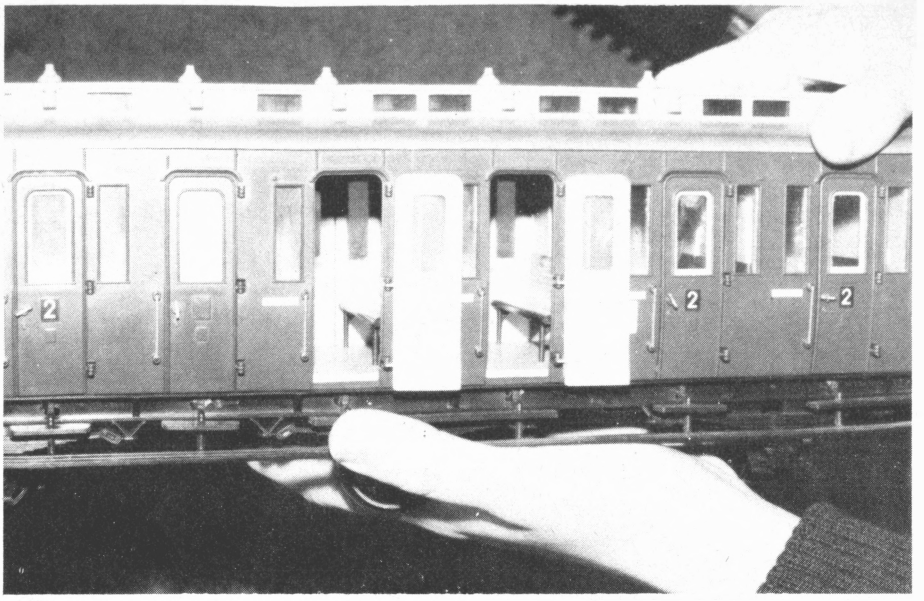
If you are a newcomer to the model railway hobby, gauge 1 may be almost unknown to you. Even those of us who have been in the hobby for years know gauge 1 best from the appearance of the spectacular Gauge 1 Model Railway Association layouts which are a popular feature of most MRC shows at Central Hall, Westminster. Gauge 1 is the next size up from gauge 0 and, yes, it is very much a minority scale these days. It must be growing in popularity, however, for the new gauge 1 models now on the market are certainly selling to somebody! The track gauge is 1¾in (45mm), and like 0 scale models the gauge 1 items have bulk and heft on their side—only more so!

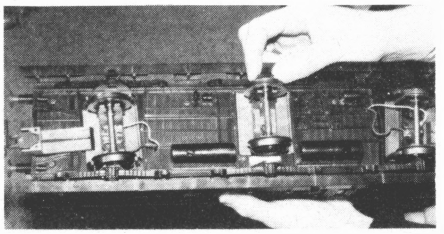
Looking at what is available in gauge 1 right now, the one thing we did find was that with only relatively few limitations, anyone can get into this scale at almost any level

Smallest Märklin locomotive, and the least expensive, is the Henschel DH500 diesel shunter. Though of German prototype it looks quite at home with British rolling stock if considered as an industrial loco. Märklin high capacity hopper is in the background.

with an absolute minimum of trouble. As with gauge 0 it is largely a matter of knowing what is available, where to get it, and how to make the most of your outlay. Let's start at the ready-to-run end of the market as that is what will get you going very quickly indeed. We have to begin with the most traditional name of all. Märklin, who were in at the beginning of the scale and are still its biggest single supplier, having re-entered the lists with a new modern gauge 1 range about ten years ago. It has prospered mightily since, with new models added to the range each year and an unsurpassed reputation for the quality and finish. We were not particularly familiar with Märklin's gauge 1 range until recently. We saw the models at toy fairs and in shops but had never run them. Making amends for this we made a sortie to A.M. Richards, the UK Märklin distributor, there to see and handle the entire range at close quarters. Underlining the growing popularity of the scale, Tony Richards had to apologise to us for the non-availability of the latest locomotive in the range, the handsome DB Class 78 4-6-4T, because the entire UK allocation had been sold against advance orders, including even the showroom sample, and he was anxiously awaiting another delivery from the Märklin factory to fulfill the orders which are still piling up!

Märklin started with the classic little Class 80 standard tank 0-6-0T and a 0-6-0 diesel-hydraulic industrial shunter which their catalogue does not identify but is, in fact, a Henschel DH500 of 1970 vintage or a little earlier. They followed up with the fantastic Class 38 (P8) 4-6-0, the Class 78 4-6-4T, and for 1981 a Class 212 diesel. In this scale, where the market is nothing like that for the smaller scales, some pretty hard commercial decisions must be made, and Märklin have done very careful design work for maximum utilisation of common components, wheels, underframes, and so on. This has resulted in a very comprehensive range which will supply you with all you can desire, or indeed have time or room to handle, so long as you are an enthusiast for Deutsche Bundesbahn (or pre-war DR) since all the models are of German





The big size of gauge 1 models is well demonstrated by our hands in these views. **Top:** *The Märklin ex-Prussian DB Coach with working door handles and full interior.* **Above:** *Sliding Cleminson trucks as per prototype help the long six-wheelers round curves. Wires and pick-ups are for interior lighting, an optional extra.*

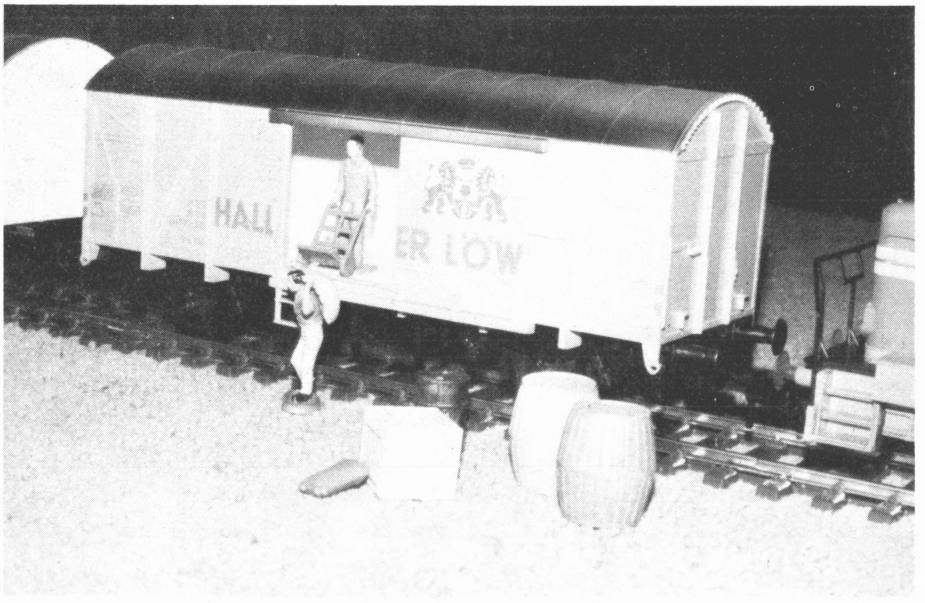
prototype. DB's own standardisation of wagon designs has helped here, too.

You quickly run out of superlatives in trying to describe Märklin gauge 1 models. The legendary finish and quality is there (nothing is skimped because of price), but the sheer size and weight of everything gives a most spectacular impression. Details not possible in smaller scales are there in every model. The Talbot hopper wagon (new for 1981) works just like the real thing; you pull the lever on the end platform and the rodding works to roll open the bottom doors. The superb ex-Prussian six-wheel coaches have brass door handles, and you open the door to reveal a fully detailed compartment. They don't let you down when you open the toilet door either, for that compartment is fully detailed also! On the P8 even the tiny safety chains are included on the tender bogies and all locos have fully detailed cab interiors and working cab doors – plus crew men which are beautifully sculpted figures in their own right.

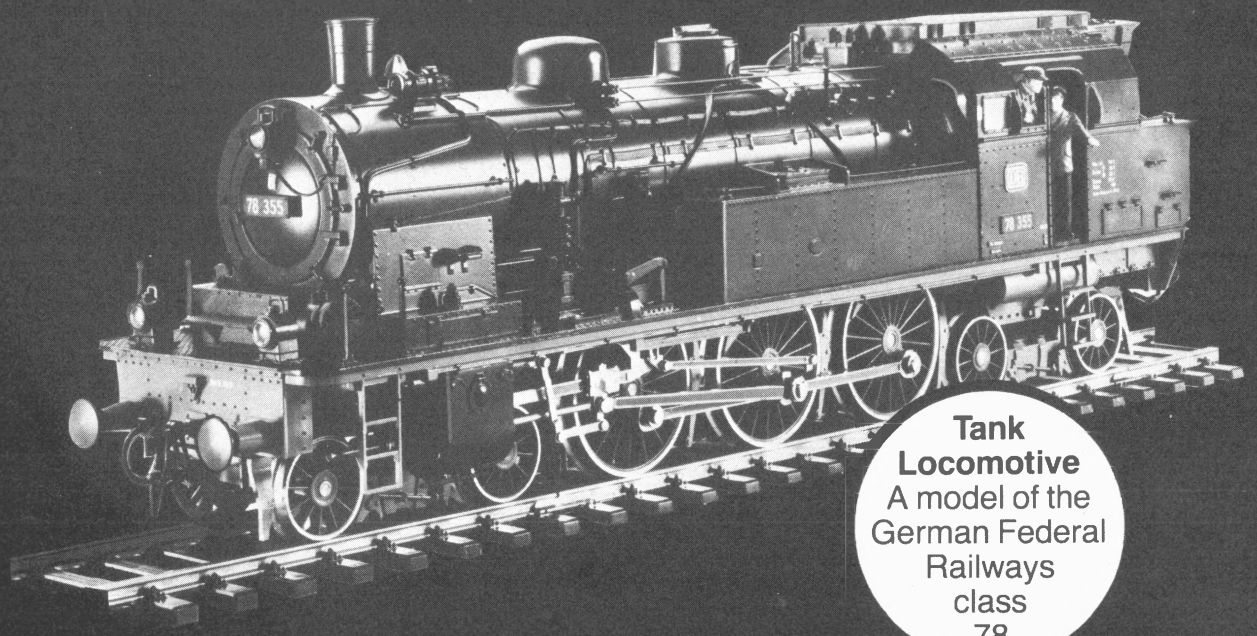
The big surprise comes with the compactness of the track system. Here Märklin may part company just a little from the purist. But they have targeted for the widest possible sales and they have overcome the major limitation of the scale – the space it needs – by making the track geometry very tight indeed. The standard small radius curve is a mere 600mm which means you can get a basic circle into 4ft square, and the basic train set oval is under 6ft × 4ft. Pointwork matches this geometry and with the sample trackwork we had, we found it possible to make a very reasonable reduced version of the Staverton Bridge layout (see last issue) with a single run-round loop in a space no more than 4½ × 10ft. A version of the Western Mining Co layout previously featured can be got very reasonably into a space 5ft × 8ft. A compressed version of a small terminus, such as Ashburton, can be laid out easily in a length of 8ft using the standard track sections.

Of course, all this is bare minimum, but we find that it does not *give* a cramped impression. The track geometry, in fact, is close to that used by Hornby in tinplate days for their standard 0 gauge track, so you can appreciate how tight it all is. However, as with 0 gauge models a little goes a long way, and the choice of small prototypes for locos and rolling stock means that visually track and stock look perfectly at home.To get wagons quite closely coupled without buffer-locking, Märklin use an auto-coupler which is, in essence, a spring-loaded derivative of the standard N gauge coupler, but quite unobtrusive, easy to release (complete with handle) and operable, also, from the track with an uncoupler ramp. You can, of course, fit three-link couplers instead, but if you use

Many accessories are available for gauge 1 models. Here a Matchbox workman with sack truck and a Britains' farm worker are unloading sacks of grain from the Märklin Löwenbrau brewery van. Figures like these, are widely sold, and are of good quality.



The great gauge 1 by märklín



Tank Locomotive
A model of the German Federal Railways class 78

The big one for indoors, on the terrace or round the garden.
The Märklin large scale model railway gauge 45mm (1¾") can be used in the house or the garden and is resistant to even the most inclement weather. It is particularly good fun for adults and children too, being strong, sturdy and amazingly realistic. The cars are big enough to transport genuine loads and provide a really original method of supplying food and drink at adult and children's parties.
Everyone will be fascinated and even the most experienced model railway enthusiast will be impressed by the quality and accuracy of detail.

See the Magnificent Märklin range at EUFMO,
Stand No. 2, Central Hall,
Westminster. August 28th to September 5th, 1981

märklín
a great leisure activity

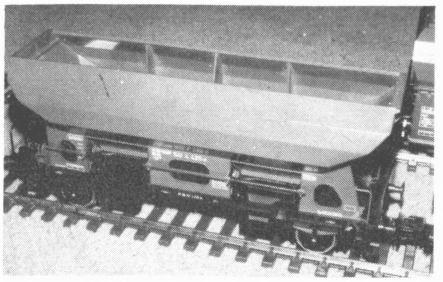
For details of stockists contact:
U.K. Distributor, A.M. Richards, 6 Richmond Way, Fetcham, Leatherhead, Surrey KT22 9NZ.

the small radius track a bar across the buffer heads will be essential to prevent locking. Märklin's second radius track is gentler at 1020mm (3ft 4in), with turn-outs to match, hence giving a 7ft diameter turning circle, still very compact, but a lot tighter than you might be expecting. Märklin point out that the big six-coupled locos, Class 78 and Class 38, can only be used with the large radius curves, something to remember if you are already planning a small gauge 1 layout and wish to use the bigger engines!

To complete the range, Märklin offer some fine plastic kits for a station, engine shed, signal box, and so on. The standard power system is a two-rail version of their 16V AC as used with Märklin H0. However, the two biggest engines are offered optionally for DC and various retailers offer services for changing Märklin AC to DC if that is your requirement, so the smaller locos could be altered also if you so desired. However, if you standardise on Märklin locomotives you can stick with the AC quite happily. It certainly works with great efficiency as our running trials with the equipment proved. All the Märklin gauge 1 range is listed and illustrated in the current catalogue (which covers all gauges) available from A.M. Richards, 6 Richmond Way, Fetcham, Leatherhead, Surrey KT22 9NZ (£1 by post).

A second company has just entered the gauge 1 ready-to-run field, and as yet we have not seen their products, only pictures, but their range certainly looks interesting. This is the Kalamazoo Toy Train Works, 6700 Donegal Lane, Delton, Michigan 49046, USA, whose first models have just been released – a 4-4-0 'American Standard' and a combine and a passenger car, all of 1890s vintage and therefore quite compact. This puts American prototype models in the hands of those who prefer the transatlantic flavour. Kalamazoo promise more releases later, but meanwhile the models are designed to run on LGB track and are to the usual DC standard. It seems likely that you could easily adapt existing LGB narrow gauge American stock to become standard gauge freight cars for the Kalamazoo line, for the dimensions are about right if measured in 1:32 scale terms. This immediately opens up the scope, even in these early days of Kalamazoo models. We do not know of a UK distributor at the time of writing.

For British prototype there is no ready-to-run range, but Tenmille are doing the next

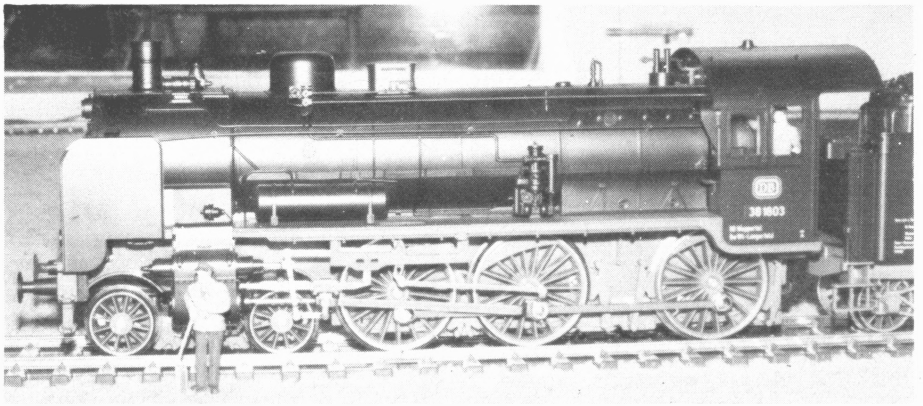


Latest Märklin release is this fully operating Talbot hopper wagon which works like the real thing.

best thing with a range of very easy and well thought out kits, a completely new product introduced for 1981. The first models in the range are already on sale and more are lined up, together with many useful accessories. A stamp or large SAE to Tenmille, Micro-Mold Ltd, Station Road, East Preston, Littlehampton, West Sussex, BN16 3AG, will bring you an illustrated catalogue and price list. Wagons and coaches, in complete kit form less wheels and axle guards, can be had at very reasonable prices for the size. We have made up samples (see this issue and last) and found them to be pleasing kits which should be within the ability of anyone who has made a plastic kit before – though these are a combination of machined wood parts and plastic. Some narrow gauge wagons and coaches to run on gauge 1 of British prototypes are also being produced by Tenmille, news of interest to anyone with LGB equipment. All sorts of small useful accessories like buffers and couplings are also sold by Tenmille, with wheels and axle guards promised for future release. In London, Hadley Hobbies now stock Tenmille, but it is also available direct.

In the meantime, if you need wheels and axle guards you need to go to another source of supply, and this is the long established firm of Bonds o' Euston Road – now at Arundel House, Rumbolds Hill, Midhurst, Sussex. A stamp plus 25p will bring you their complete catalogue, but at very reasonable prices they offer neat cast wagon axle guards (55p each), loco and wagon wheels of all sorts, track components, castings and much else such as complete coach bogies. The firm also produces 0 gauge components in similar fashion, plus a few items for 00 or suitable for LGB so their catalogue of bits and pieces is always useful in any case. Everything comes quickly by mail order and we used their wheels and axle guards on the Tenmille models we made.

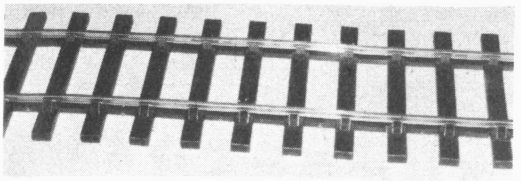
Top of the Märklin range is the DB Class 38 (ex-Prussian P8) which comes with various options including a steam sound system. Loco crew is also supplied.



The other major source of supply is the Gauge One Model Railway Association itself. For members only they offer a small but good range of components like wheels, axle guards, bogie components, track components for home assembly, and a complete LMS signal kit. The prices are distinctly modest – in fact, a good reason for joining – and cheaper than equivalent items in smaller scales. The association also has a newsletter three times yearly, promotes meets and other activities, and is well worth the £4 a year subscription if you want to model in gauge 1. There is a £2 joining fee for new members. Included in the package is the association's free book which tells you how to build their standard 'project', the good old Fowler 4F as a live steamer from castings and a certain amount of scratch-building. For membership details send a SAE to S.J. Roberts, 112 Clarendon Road, Broadstone, Dorset BH18 9HY.

Live steam is very suitable for gauge 1 as the models are big enough for this sort of propulsion. In fact this is the big attraction to many people, though others are happy with electric power. The Japanese firm of Aster has put gauge 1 steam within reach of anyone who can afford it by producing a quite well-known range of screw-assembly live steam loco kits in recent years. They started with a SR 'Schools', have since produced a V & T 'American' 4-4-0, a Japanese 2-6-0, a SR 'King Arthur', and more recently a GER J69 0-6-0T. At £225 UK this is the cheapest of the range, the others costing up to £400 plus. The kits are all fully finished as far as painting goes. You just screw them together, raise steam, and away you go! In UK the distributors are Burtons and shops like Hadleys and Beatties usually hold stocks. Most gauge 1 live steam, however, is scratch-built for which firms like Bonds or Stuart Turner can supply wheels and key castings. Hadleys also stock Fulgurex, Spring and other European makes of limited production gauge 1 models.

Track and accessories are the least of your worries in gauge 1. Aside from the reasonably priced Märklin sectional track, which depicts European style flat bottom track very nicely indeed, Tenmille have now introduced British style bullhead flex-track (see review last issue) with turn-outs promised, and Bonds and the Gauge One Association both offer sleepers, chairs, and track for home assembly, which is fairly easy in the large gauge 1 size. Peco at the 1981 Toy Fairs also announced gauge 1 flex-track in their familiar Streamline range and this should be available later. We found that the Tenmille track joins with Märklin, given a little filing at the join, and we think the Peco track will also be compatible. Scenic accessories are no problem at all – in fact, there is a surfeit, for all the 1:32 scale road vehicle kits and die-casts, Britains farm series, slot racing figures from various makers, 54mm scale figures and accessories in general, and much else, go with gauge 1 railways. For example the Scalextric race control tower is a perfect small modern signal box if you omit the loudspeakers and motor racing signs, and there is much else in this line which can be easily adapted for rail structures. Look also among the dolls house suppliers for structure



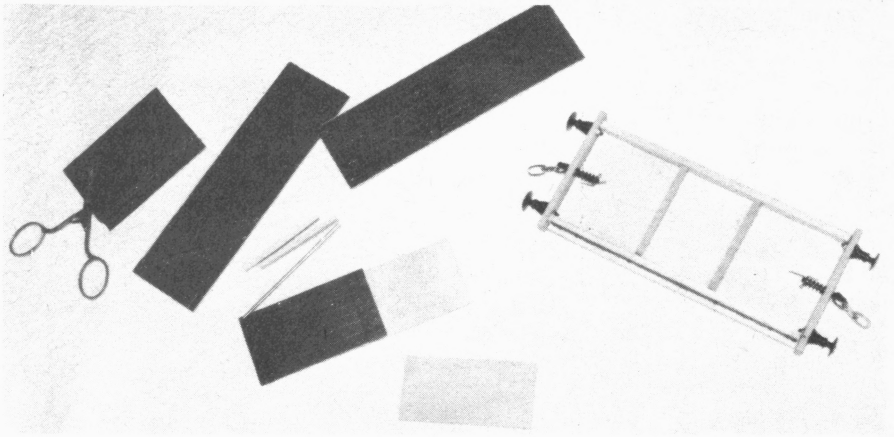
Excellent British prototype bullhead section rail is available in the Tenmille range, as shown here.

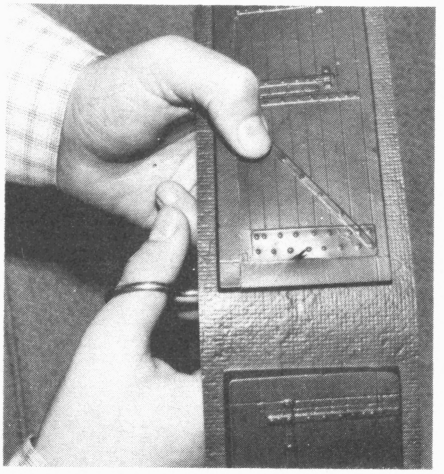
parts – for example Builder Plus produce brick papers and wall papers for dolls houses, but these are fine for gauge 1 buildings too.

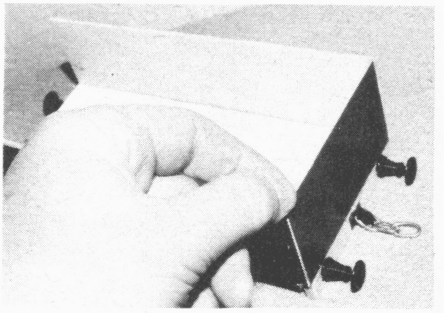
In summary, therefore, gauge 1 is very much a practical proposition, though how much it costs to start with is somewhat dependent on your approach. Bearing in mind that you don't need much of anything if you make a snug little compact layout, you could end up spending little more than you would for 00. If you are happy with German prototype, then Märklin have a good starter set for around £135 UK (see next month's 'Test Track') and the Henschel diesel shunter will cost £50 (or a little less) if you want a good basic loco. Obviously you can spend more than this – the top version of the Märklin Class 38 4-6-0 costs around £470 for example. Wagon prices are in the range £11-£17 upwards. For British prototype, Tenmille kits, plus possibly some scratch-building using components, could get you going in rolling stock from £7-£10 per wagon (or even less). If these prices seem high at first glance, remember that a gauge 1 wagon is over eight times bigger by volume than its H0 or 00 equivalent so prices are right in step with size, possibly even relatively cheaper! For example the Märklin Henschel diesel shunter costs around £23 in H0 so its exact gauge 1 equivalent at around the £50 mark is a real bargain.

One suggestion we have for the least expensive start in British prototype is to use the Märklin diesel shunter with Tenmille stock. The Märklin branch line coach passes muster for a British light railway coach too, and a pleasing light railway layout could be built in a very small space following this line of thought. Obviously the same applies for a German light railway or Kreisbahn, except that all the wagons are instantly available from Märklin. Small German diesel shunters, particularly Henschel models, look 'British' enough to be at home with British wagons. The alternative is to acquire either the diesel shunter or the Class 80 tank engine and ditch the body in favour of a scratch-built British outline. One other alternative, actually done some years ago by Robert Symes, was to buy the LGB Schoema narrow gauge diesel shunter and add buffing gear and modified steps, etc, to convert it to a large standard gauge diesel shunter which he then used on his British style layout. Ideas like this certainly make gauge 1 a very practical proposition.

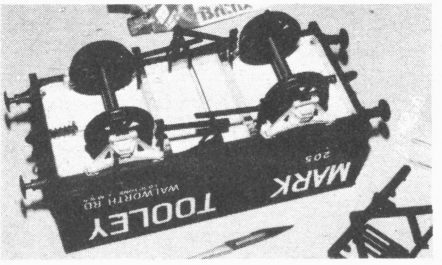
Finally, gauge 1 lends itself to a garden line, but with the compact geometry of Märklin's track you could fit a small light railway or industrial layout indoors in the space you might normally use for 00 gauge. If you have a conservatory or outhouse in which to build, or a potting shed or unused garage, then gauge 1 might go even higher on your list of priorities.



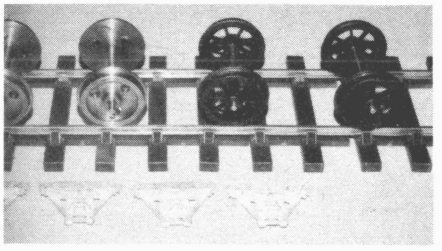




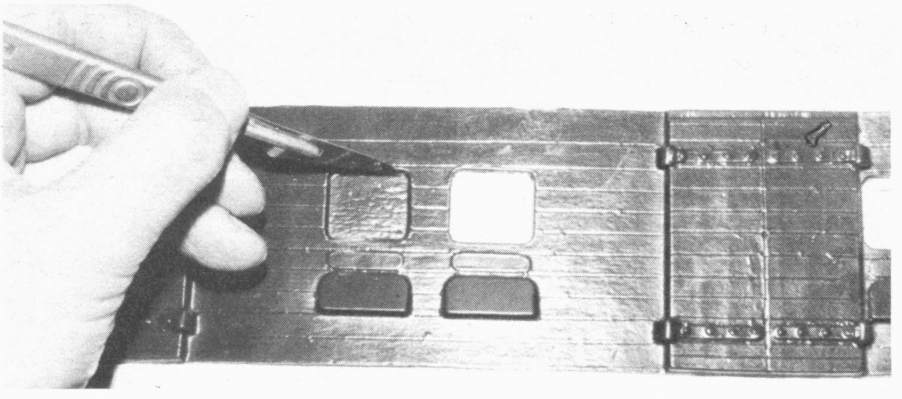
Rolling stock from Tenmille kits for gauge 1



The Tenmille kits enable anyone with basic kit building experience to put together reasonably priced and well-detailed British rolling stock. The sequence above shows the work involved in making the standard 12 ton RCH private owner coal wagon. Tenmille suggest a craft knife for cutting out the plastic vac-form parts, but small nail scissors can also be used. These parts are glued to the pre-cut wood pieces (using white PVA glue) and then everything is glued together on a flat surface. Axle guards are purchased separately and glued, pinned, or screwed to the solebars. **Below:** *Cutting out windows for the SR GUV, a more complicated kit made the same way.*



Above: *Bonds O' Euston Road can supply axle guards and wheels for gauge 1, but Tenmille also plan to release these items later. Various types are available to suit all requirements.*

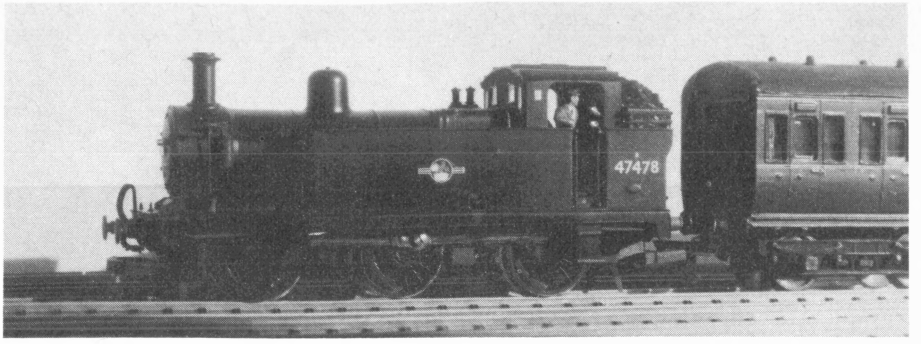


IMPROVING THE 'JINTY'

Richard Gardner brings the Hornby 3F tank engine up to a higher level of realism, and modifies it into an auto-tank.

Way back in the early days of Tri-ang Railways the LMS 3F general purpose tank engine featured as the main 'starter' locomotive in the new OO scale series. It was produced by the same firm in TT too. Many of the early models, in both OO and TT, are available on the second-hand market.

Over the years the model changed identity and livery many times – though all the 'improved' liveries were in fact bogus. So far as I can tell there never were real 3Fs in BR mixed traffic lined livery and the LMS also painted them plain black. There is a preserved loco in lined red but this is also incorrect, even though it looks a joy to behold! Perhaps a reader will write in to identify an example in lined BR livery but I never saw such a beast and have yet to spot one illustrated in any book or magazine. So whatever else you decide to do with the Hornby 3F a repaint is vital. The TT model, by the way, was in plain black.



Hornby's familiar 3F 0-6-0T in its latest form is well worth some extra treatment to transform its appearance. Here is Richard Gardner's model after push-pull conversion with the fireman on his own in the cab.

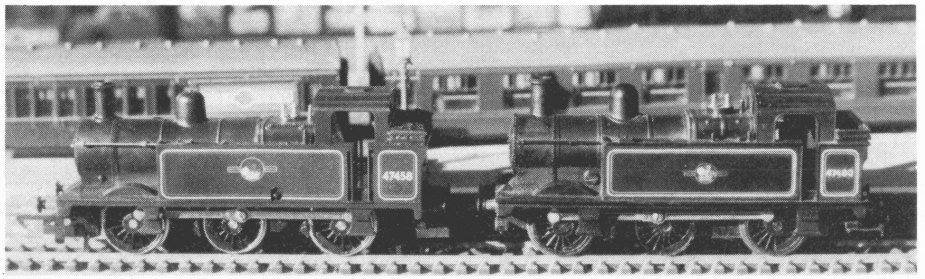
A few years ago Hornby re-released their 3F in much-improved form. The revised model had individual handrails on the boiler sides, cab interior fitted, brake shoes and glazing in the windows. In addition the loco had a new chassis with front-wheel drive (to give the clear cab) and neater couplings.

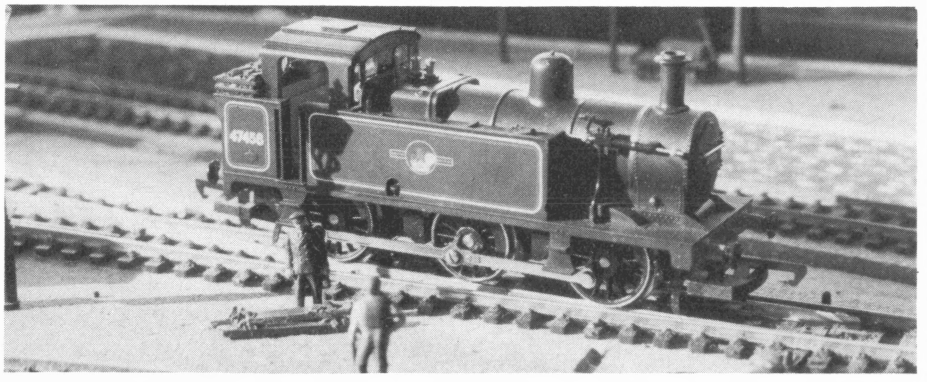
So what is there to do beyond Hornby's attempts? Well, there is quite a lot of scope for further improvement. The motor and chassis are excellent runners but as purchased the loco lacks adhesion. With a bit more weight over the wheels the performance can be transformed. As far as visual appearance is concerned the new model still looks too short and high even though the general details and proportions are excellent.

I already had an early Tri-ang 3F in my loco stud but this had the old crude wheels which were unsuitable for my current trackwork. The body on this loco was too inaccurate to warrant a major conversion job so I decided to convert the latest Hornby model into an auto-fitted 3F to replace the Tri-ang model. It was only as I delved into the research that I realised just how much work was needed to make even this later model acceptable.

The photographs and drawings illustrate all the conversion stages so I shall restrict the article to a stage-by-stage guide to the work involved.

Bottom: *Here is the 3F model straight from the box – good as it looks it can be considerably enhanced.* **Below:** *The current model is seen on the left, showing how much better it looks than the 1964 version on the right.*





STAGE 1

Unclip the body moulding from the chassis and remove the bright-yellow cab interior. Place the chassis out of the way and rub away the existing body decorations with the finest grade 'wet and dry' paper.

STAGE 2

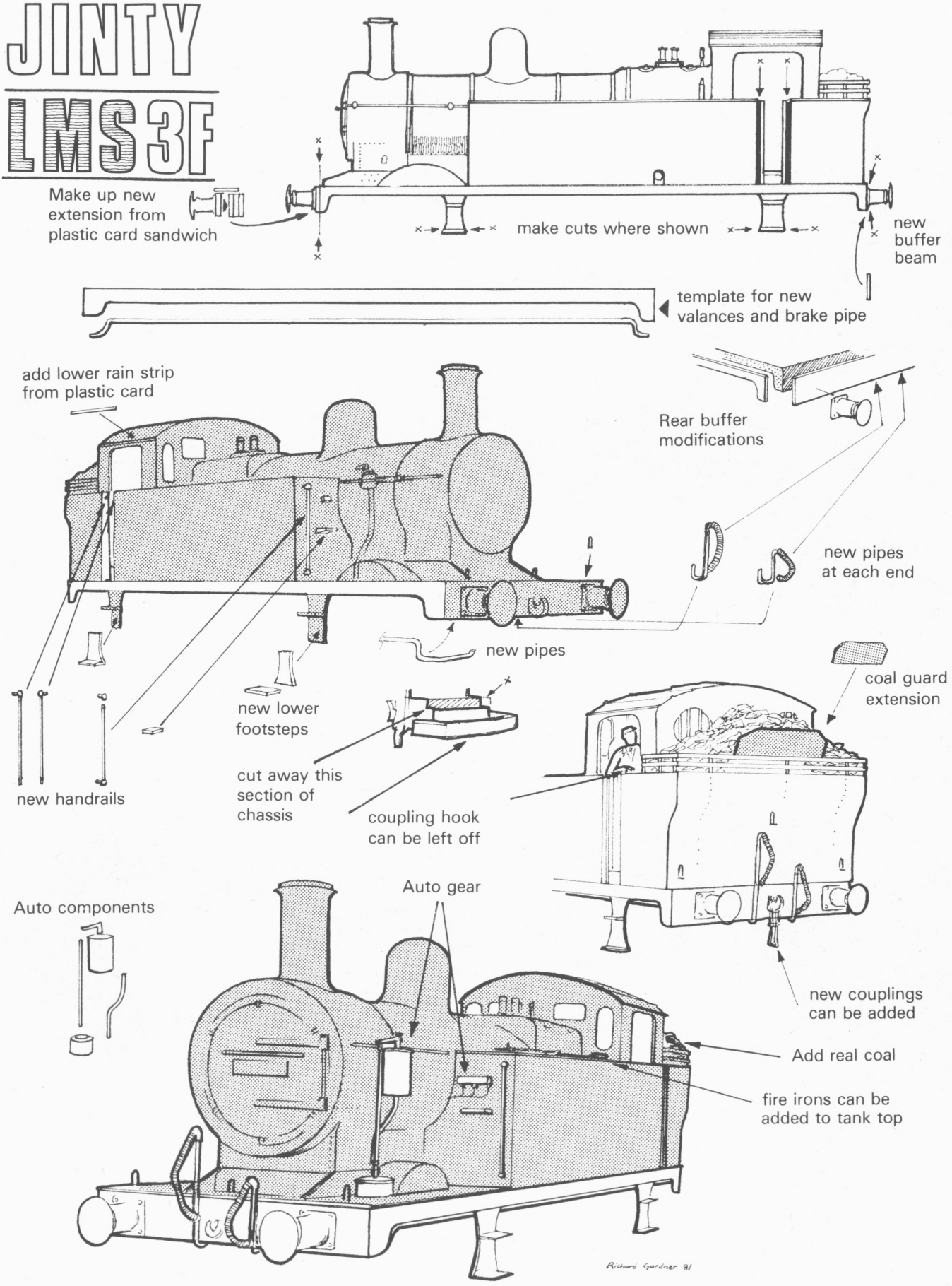
The biggest error – and the most obvious visual fault – with the loco as taken from the box is the high-sitting attitude of the body on the chassis. Thanks to the positioning of the motor it is just about impossible to lower the body on the existing chassis. As I was quite happy with the pick-up arrangements and the performance of the XO3 motor I was reluctant to scrap the chassis and scratch-build a new one. A study of scale drawings and photographs of the class showed that the Hornby model was a scale foot too short and the footplate valences were too thin. So the problem resolved itself . . . lengthen the footplate and deepen the sides and an optical illusion would eliminate the high-sitting look of the locomotive. I tried it out with a piece of plastic card taped to the body and it worked.

I cut two chunks of brass to fill the side tanks and affixed these inside the body with Five Minute Epoxy. Care was taken to ensure that there was adequate clearance around the motor and above the wheels before the weights were fitted. When firmly in place I tried out the loco on my layout. The change in pulling-power and slow-running was astounding. Without conducting any complicated trials I found that the loco would now haul at least 40 wagons or twelve coaches at a real crawl with no hesitation, even on my few remaining dead frog turn-outs. After this brief running session I removed the chassis again in order to work on the body. The addition of the weights gave the body a much nicer 'feel' which helped when all the alterations were underway.

STAGE 3

The front buffer beam can be sliced off as indicated on the drawing. The rear buffers are cut off at the base of the shanks so that a new deeper buffer beam can be added from plastic card. After this is in place the buffers are replaced, slightly lower than before. A

JINTY
LMS 3F


Make up new extension from plastic card sandwich
make cuts where shown
new buffer beam
template for new valances and brake pipe
add lower rain strip from plastic card
Rear buffer modifications
new pipes at each end
new pipes
new lower footsteps
new handrails
cut away this section of chassis
coupling hook can be left off
coal guard extension
Auto components
Auto gear
new couplings can be added
Add real coal
fire irons can be added to tank top
Richard Gardner '81

plastic card sandwich is built up behind the front buffer beam to lengthen the footplate by 4m. A new section is cemented on top to line up with the existing footplate.

STAGE 4

The steps on the Hornby model are in the correct position but are too narrow at the base to be accurate. In order to preserve the strength of these delicate items I found it better to modify the moulded steps rather than cutting them off completely and replacing with new ones. To modify the narrow lower half of the steps I filed away the bottom foothold and then reduced the thickness of the plastic to the point where a new lower overlay could be placed, thus restoring the original thickness of plastic. The drawings and photographs depict the fitting of the new step parts. Using the drawing as a guide you can cut new footplate valences from plastic card and cement these over the existing sides. If making a model of an auto-fitted 3F then pipes can be fashioned from .040 inch plastic rod. The sit of the body on the chassis can now be tried out after the ends of the plastic chassis moulding have been cut down (see drawing). The lower buffer height above the rail and the longer deeper footplate will be found to have overcome the height problem.

STAGE 5

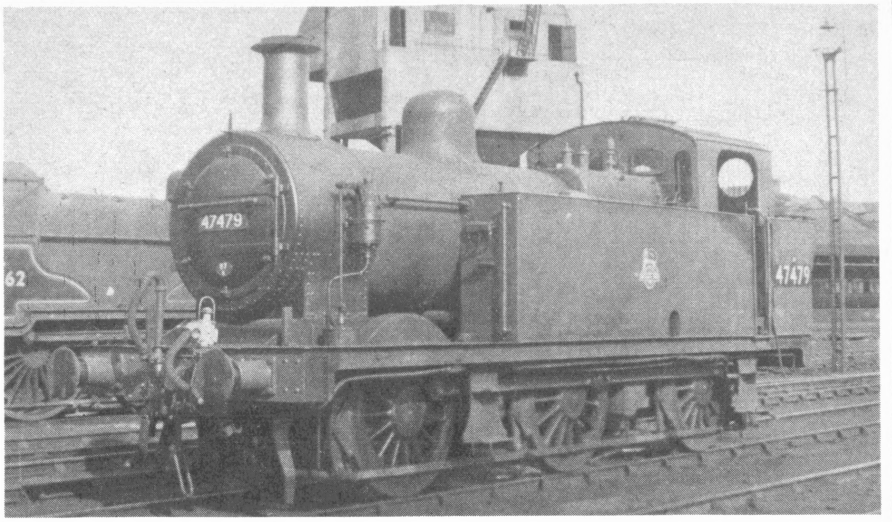
We can now get down to tackling the cosmetics of the conversion. First task is to cut away the moulded handrails flanking the cab entrance. Next drill appropriate holes (preferably with an electric mini-drill) to take the turned knobs for the brass handrails (obtainable from most good model railway suppliers). Five Minute Epoxy is the most convenient glue, for the metal-to-plastic jobs, applied on the end of a cocktail stick. The drawings show where the handrails should go. Hornby omitted all details from the front of the tanks so new footsteps will be needed here as well as handrails. Lamp irons can be fitted along with vacuum pipes. Note that auto-fitted locos had double pipes at each end.

STAGE 6

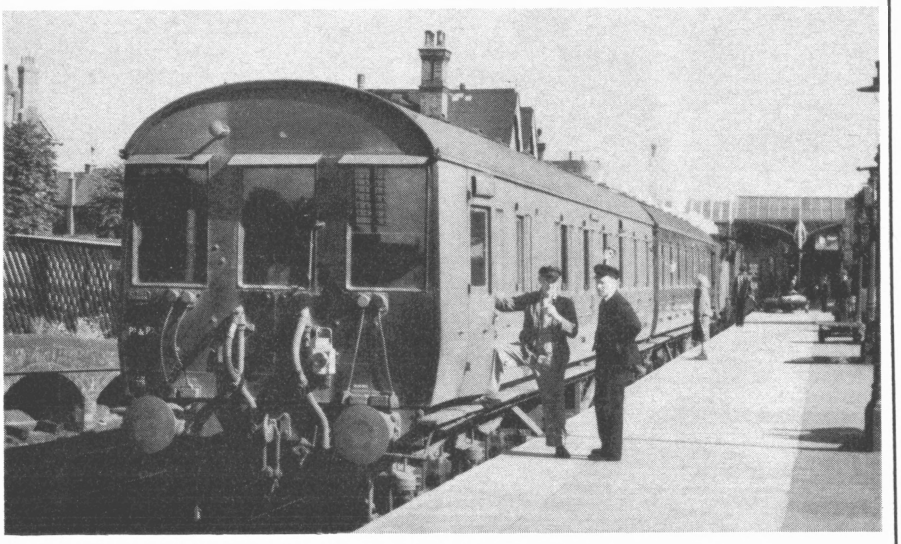
In order to increase bunker capacity the LMS added an angled plate to the coal rails. This is easily added from plastic card. A generous heap of coal will help hold the extension plate in place while the cement dries.

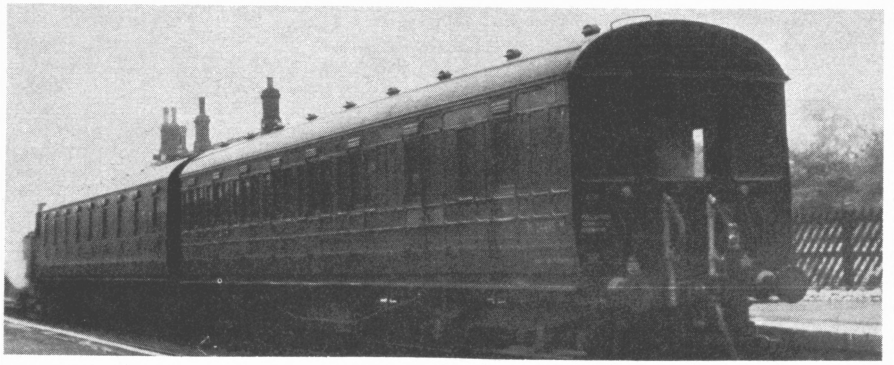
STAGE 7

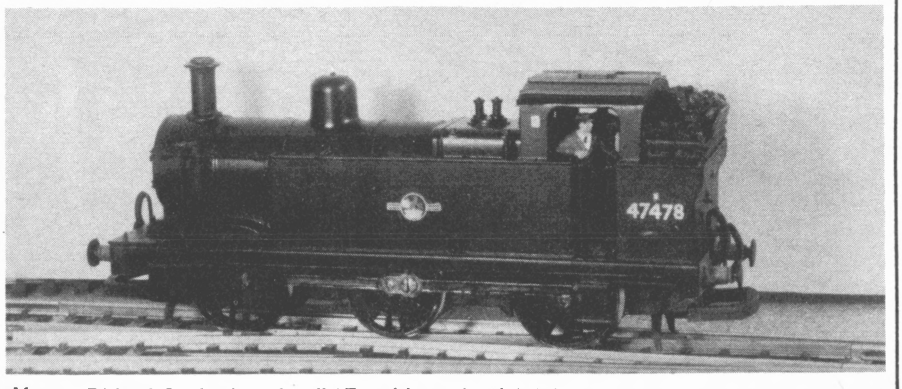
A small number of 3Fs were converted to push-pull passenger tanks for use on the Brynamman service, though the standard locos were also used for these branch locals. The non-fitted 3Fs would simply run around a single push-pull coach. To convert the Hornby model to an auto-fitted Jinty is simplicity itself. All that has to be added are the extra pipes at the ends and beneath the footplate and the building of the auto equipment on the side of the smokebox. The drawings and photos show the work involved. The auto gear is made from brass wire, sections of plastic sprue and the top 'angle crank' is from plastic card. If you wish to remove the unsightly coupling hook from the tension-lock coupling bar the engine can



Above: *47479, a push-pull fitted 3F showing the equipment on the smokebox side. This loco still has a Midland pattern chimney (D. Ibbotson).* **Below:** *End detail of the LMS push-pull coach with driver and guard. Note 'Pl & Ph' marking (Photomatic).* **Centre:** *Ex-Midland driving trailer 3rd at Southwell – 1st period panelled stock but with the same end fittings (H.C. Casserley).*







Above: *Richard Gardner's push-pull 3F model, numbered 47478.*

still be used in connection with hooked rolling stock. On my model I have removed the loco hooks and kept one hook on the 'inside' end of the push-pull coach.

STAGE 8

The modified loco is now ready for the final painting and finishing. After rubbing down all unwanted mould lines the body was given an overall coat of Humbrol matt black from the aerosol can. Several thin coats are preferable to one heavy coat. After the matt paint had dried completely I gave the model a thin coat of Testors gloss clear spray lacquer. After another day or so allowing the model to dry I applied the Kemco transfers. When these were set I gave the loco two thin coats of Testors Dullcote matt varnish and put the model under a shoe box to dry away from the dust.

The small details were touched in with hand-brushed Humbrol. Apart from toning down the wheels and connecting rods with a home brew of matt black, track colour and silver paint, the only remaining task is to paint the cab interior moulding picking out the various details and to add the crew. I used the superb Airfix figures which have great character and are quite bulky compared to some on the market. For auto-train use I suppose you could leave the driver out as he should be in the coach. I placed the conventional pair in the cab to cater for freight use on my line.

When you re-assemble the body and chassis you should now have a very realistic Jinty with a performance to match its enhanced looks. (Before anyone writes to the editor complaining about the use of the term 'Jinty' to describe the 3F let me just add that I use the term as the type has always been known thus in my lifetime. I know purists may point out that another small tank was the true Jinty but nevertheless, rightly or wrongly, the LMS 3F tank has become known as the Jinty to most people so I bow to the majority!).

THE COACH

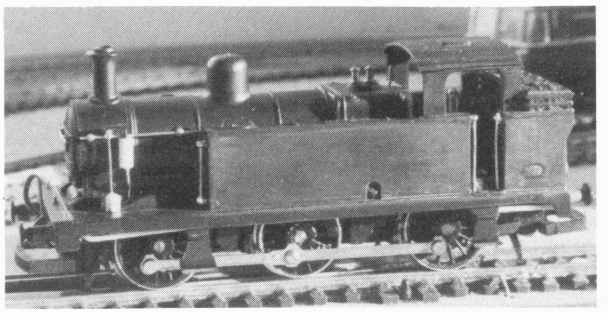
The LMS push-pull coach was built way back in 1966 when Graham Farish produced LMS suburban coach kits for about 15s or 75p! The original tin roof was thrown away and a new one fashioned from wood with cast vents fitted. The kits had all-metal chassis and bogies, including the wheels and the model is a smooth, stable runner. It is very heavy by modern standards and is probably the equivalent load to six Mainline or Airfix plastic coaches!

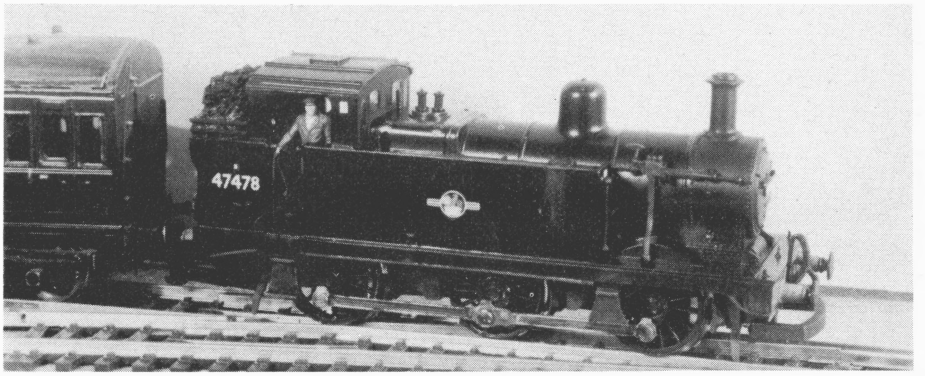
The windows at the driving end were cut out by drilling then filing to shape. The hoods were from black plastic card and Kenline provided the twin vacuum pipes. Buffers were bought as brass turnings and a driver was placed at the controls. There is no auto coupling on the driving end. The coach was hand-painted in BR maroon with Kings Cross lining. The roof was matt black with a touch of silver added.

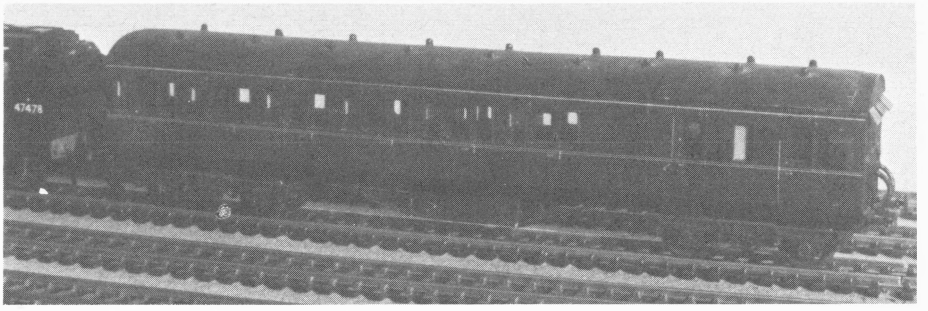
Although Graham Farish ceased production of the kits many years ago, their more recent ready-to-run suburban coaches are virtually identical and can be used to make suitable push-pull vehicles exactly as shown on my older model. The Airfix brake in the suburban series is of the wrong type as there should be no lavatory compartment. If you cannot find the Farish coach then the Airfix model is the next closest version available in ready-to-run form and can be modified to suit. Alternatively you can look to the more expensive metal kit ranges (eg, MTK).

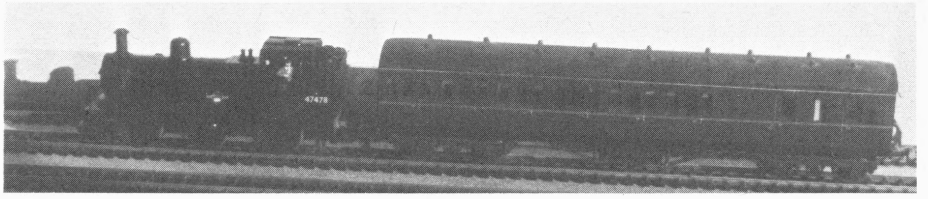
If you want a distinctive branch train and you are modelling LMS or BR(LMR) then this combination has much to offer – and it is certainly compact. Just the job for the regular shuttle in and out of a bay platform . . . with no running around required!

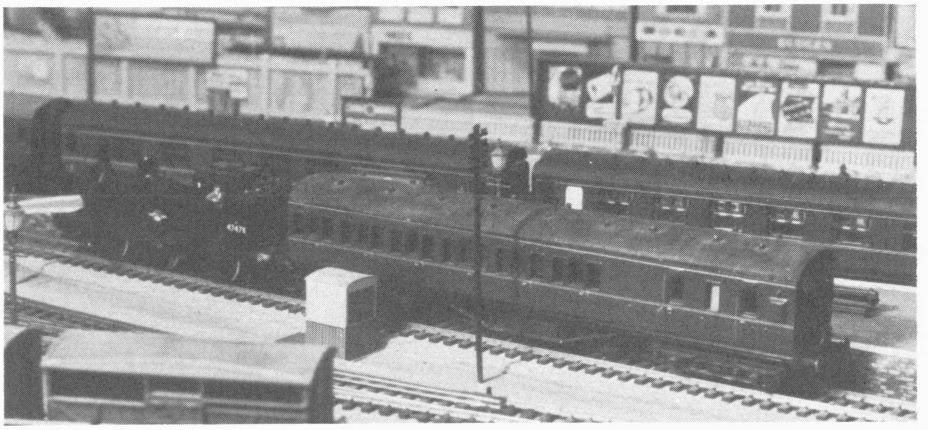
Top to bottom: *Model with push-pull fittings during conversion. Completed model from right side. The Grafar Brake/3rd converted to a driving trailer with end windows and fittings. The complete train of 3F and trailer is very compact. The unit in service on Richard Gardner's Linfield layout.*

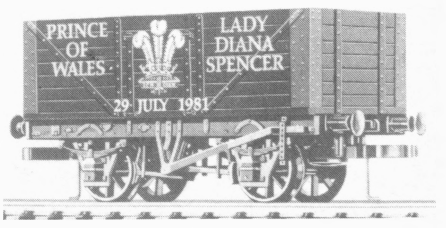












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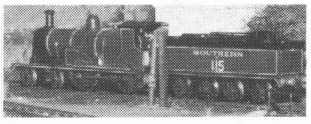

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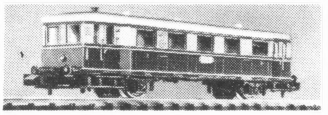

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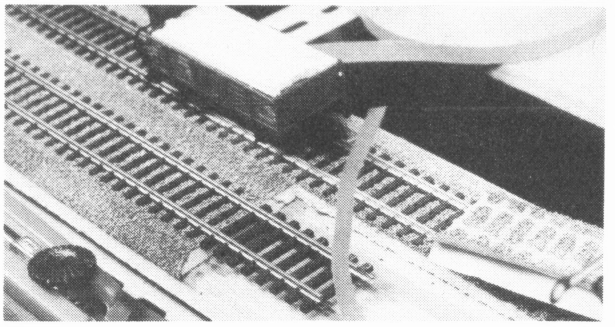

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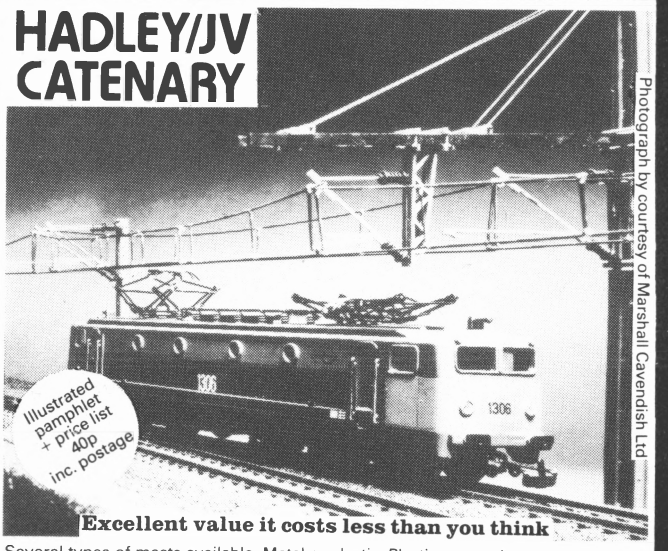

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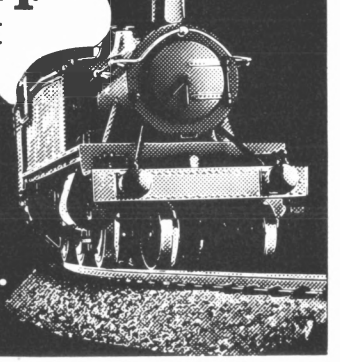

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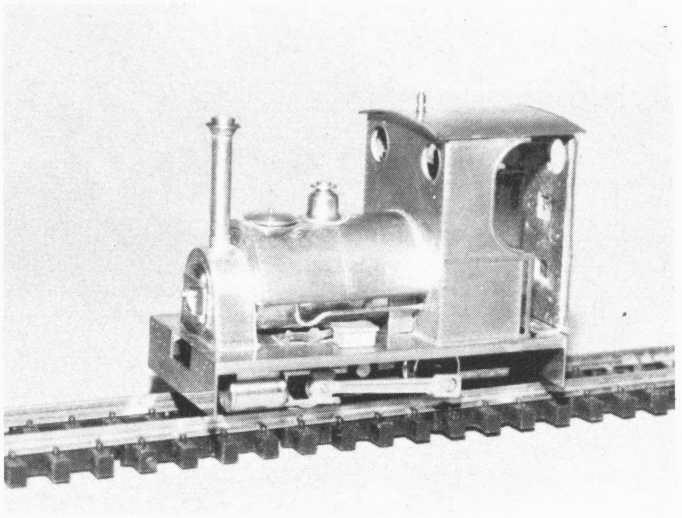
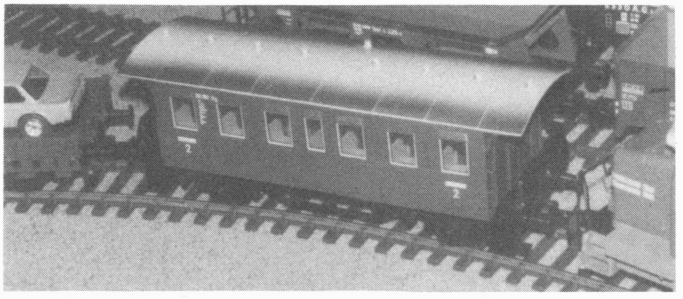


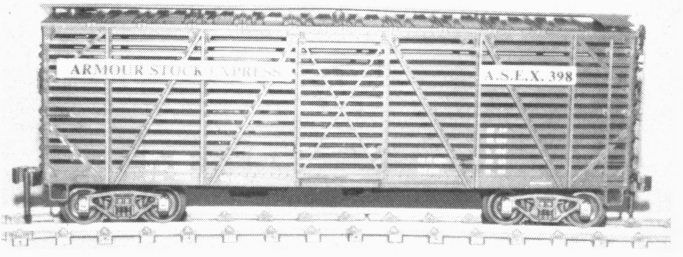
Joe Works: Peckett 0-4-0ST, 1:76 scale/009 gauge, UK £26.95
The Japanese firm of Joe Works has built up an enviable reputation in a very short time for the quality of its brass narrow gauge kits. Previously these have been of Japanese, German, or American prototype, but now they have produced a British prototype to the special order of Victors who sell Joe Works models in Great Britain. The chosen loco is a delightful replica of a Peckett standard design of the 'Cranmore' class. These were quite widely sold, mainly to industrial users, and they have a very typical British appearance which will endear the model to those who prefer an actual British loco to an imported Baldwin. The kit is made up of brass parts with the exception of cast metal tool boxes and plastic side rods. It can be soldered together or glued with cynaoacrylate or other strong adhesive. The motor sits in the cab and shows a little, but could possibly be disguised by 'canvas' side screens from paper since real locos frequently had these for use in bad weather. Chassis is ready-assembled and the body is secured by screws. Model runs very smoothly, as with previous Joe Works offerings, and the price is very reasonable for the quality offered. Our sample was loaned by Victors, 166 Pentonville Road, London, N1, who can supply by post, postage extra.

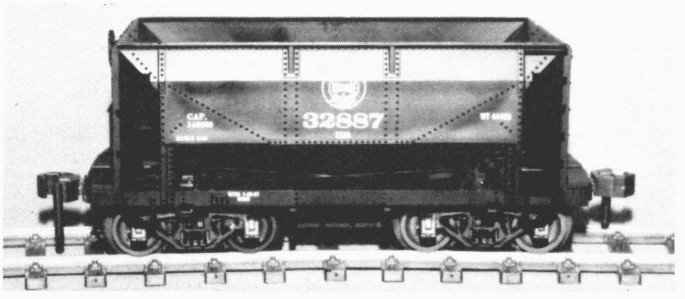


Märklin: Branch Line Coach, 1:32 scale/1 gauge, UK £17.18
This is the basic four-wheel coach from the Märklin gauge 1 range, available in green suitable for DB/DR use and in red/cream for a typical private railway livery. The prototype was one of the old-time Württemburg State Railway vehicles and has been modelled frequently in other scales too, a popular subject and packed with character. As it is only about 1ft long even in gauge 1 size it is nicely compact. It has end verandahs with opening end doors and a full interior of slatted 'bone shaker' seats. A stove pipe is indicated in the roof detail though there is not a stove inside. All handrails and piping are fully modelled and the roof has a smoky finish. The only missing detail seems to be glazing in the end doors, but this could easily be added. Standard Märklin gauge 1 auto-couplers are fitted. The model has plenty of heft and strength and rolls well. Though based on a German branch line prototype this model should also interest those working in British prototype gauge 1 for it quite closely resembles a type of coach seen in years gone by on British light railways such as the Wisbech & Upwell Tramway, Wantage Tramway, and others. Just a repaint and possibly some detail changes and additions would anglicize this nice model very quickly.

Roco: American freight cars, 1:48 scale/0 gauge, UK £5.95/£5.20
In our May 1981 issue the survey of gauge 0 equipment pointed out that the discontinued line of American freight cars formerly produced by Roco of Austria for Atlas in USA, is now back in production under the Roco name. First of these are now released and the range is available in UK from Victors, 166 Pentonville Road, London N1. At the higher price the first two releases are a 40ft stock car and a 40ft reefer, and at the lower price a gondola (open car) and a hopper. All are available in varied road names, our samples being a stock car of the Armour Stock Express line and a Duluth, Missabe, and Iron Range hopper. Both are examples of high quality plastic engineering in the usual Roco tradition, having full brake gear and detailing even where it is not normally visible. The finish is good too, though our hopper is black whereas we have only ever seen red/brown DMIR hoppers of this sort. The number and markings are correct, however. DMIR is a major carrier of ore and the 'mini' hopper modelled by Roco is something of a 'trademark' for this company though hoppers of the same type are used by other ore carrying lines. DMIR runs unit trains of these hoppers and they are close coupled in fours with only the outer cars having knuckle couplers. Cars are also used conventionally coupled, however.

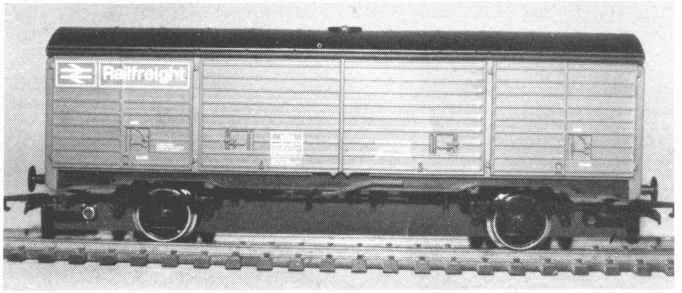
While these are excellent models, it must be pointed out that the wheels are to coarse 'tinplate' standards, matching Lionel, and the knuckle couplers are also the compact Lionel type. If you only have Atlas/Roco locos the couplers will be no problem, but the flanges on the wheels are too deep for Peco or Rivarossi track. You need to file down the flanges (which is what we do) to run on fine scale track, or replace the wheels completely with RP25 scale wheels which are available also from Victors. Similarly the couplers can also be changed for Kadee magnetics if you





want final perfection. The models run well and couple closely and represent good value for the size and detail. Victors can supply by post, postage extra.

Hornby: Speedlink Van, 1:76 scale/00 gauge, UK £3.30
Latest version of the Hornby VDA 'all doors' box van is in the new and striking orange/grey Speedlink livery, making it a colourful addition to your stock for a modern era layout. Though the original has a rigid wheelbase, the Hornby model has pivoted axles to ensure it goes through tight curves. This also gives a good degree of compensation and we found the model rides very well.



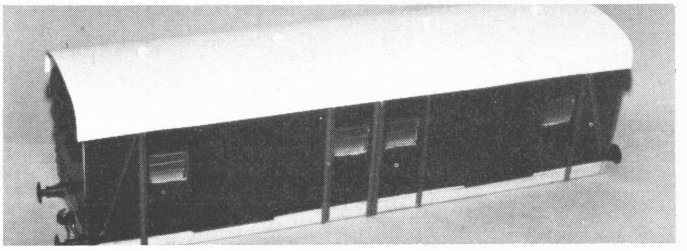
The only areas for improvement will depend on your standards. If the wheels were replaced with finer type and the tension-lock couplers were replaced you would have a model of excellent appearance. As it is the rather heavy looking wheels and prominent couplers detract slightly from an otherwise delightful model.

Mössmer: Loco cradle, for N/Z scales, UK £1.21
Mössmer of West Germany have produced a very useful loco maintenance cradle which is actually foam plastic in light green with a cut-away to hold tools and another cut-away to hold a small loco. The idea is to hold a model firmly upside down while maintenance and cleaning is carried out. It is actually intended for Z scale, but we found that small (up to 3¼ inch long) N scale locos will also fit. Also, of course, wagons and coaches can be

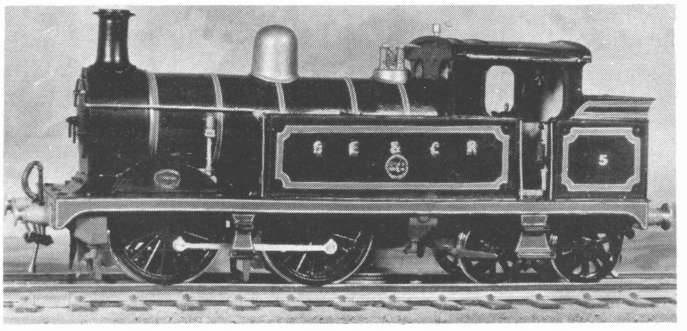
similarly held while you work underneath them. The foam grips the model without scratching or damaging it. This is a good idea, useful for any workbench. The distributors are A.M. Richards, 6 Richmond Way, Fetcham, Leatherhead, Surrey, KT22 9NZ. Cradles are also available for H0 at £1.62 and for 0 scale at £2.82.

Mössmer: Foam plastic roadbed, for gauge 1, UK £3.49
Foam ballast underlay is common enough in the smaller scales, but now Mössmer have produced a giant version of this to fit Märklin gauge 1 track. It must be stressed it fits this track and not necessarily British gauge 1 track because the sleeper spacing differs slightly between Britain and Germany. The ballast strip is in grey and the Märklin track just drops neatly into it. It is supplied in 3 metre rolls and will bend to fit curved track. Ballast bases for Märklin gauge 1 turn-outs are due also, but it would be easy enough to cut the strip to fit any turn-out. The foam is suitable for outdoor use also, according to Mössmer though we haven't put this claim to the test yet! The UK distributor is A.M. Richards, 6 Richmond Way, Fetcham, Leatherhead, Surrey, KT22 9NZ. Also available is a special tight radius base for the first radius Märklin curved at 84p per section and a complete inclined gradient base at £32.79.

Melody Mills: Railway wall coverings
Melody Mills, Cossington Road, Sileby, Loughborough, Leics LE12 7BU, have introduced a range of tough colourful wall coverings (which appear to us to be washable) suitable for bedrooms, modelling dens, club rooms, etc. They have patterns for most interests including cars and aviation. Steam age railways in full colour are another theme for train enthusiasts, featuring famous locos of the pre-nationalisation companies. Each roll is 11 yards long and 20.05 inches wide. It should be available from all wallpaper stockists. Further details of stockists and prices are available from the advertising manager of Melody Mills at the address given.



Tenmille: SR GUV, 1:32 scale/gauge 1, UK £12.55
Tenmille, Micro-mold Ltd, Station Road, East Preston, Littlehampton, West Sussex, BN16 3AG, have released another kit in their gauge 1 range, this being a standard GUV of the familiar type as introduced by Maunsell in 1928, and still to be seen in later production form. The many planks and vents of this design come over well in Tenmille's plastic moulding system. The kit is quite a collection of bits and pieces with wood, wire, plastic sides, ends, and roof, but no wheels or axle guards which must be bought separately. Assembly proved easy enough, however, aided by a good instruction sheet, and this is a very pleasing model to build.



Latest in the Wills Finecast range of 00 gauge cast metal loco kits is this superb ex-SECR Wainwright 'H' class 0-4-4T, later a mainstay of the SR almost to the end of the steam era. The Wills model shown here is in the original SECR livery as can be seen on the preserved loco on the Bluebell Line. Complete body kit costs £15.46 and there is an etched nickel silver chassis, less wheels and motors, at £6.93, or alternatively a full rolling chassis with all parts except the motor at £11.73. These prices exclude VAT, which must be added. Also new from Wills is a useful addition to their scenic series, a nicely moulded kit for a corrugated iron cycle shed, plus eight bicycles. Kit comes in green plastic and doesn't really need painting. Should be available now.

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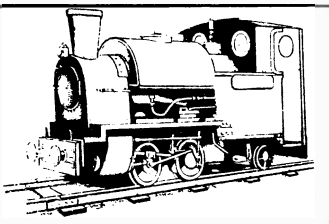

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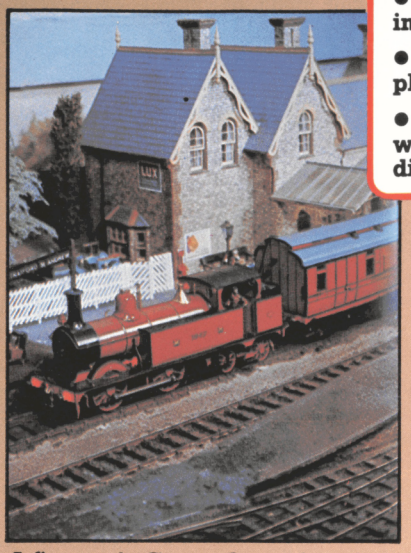

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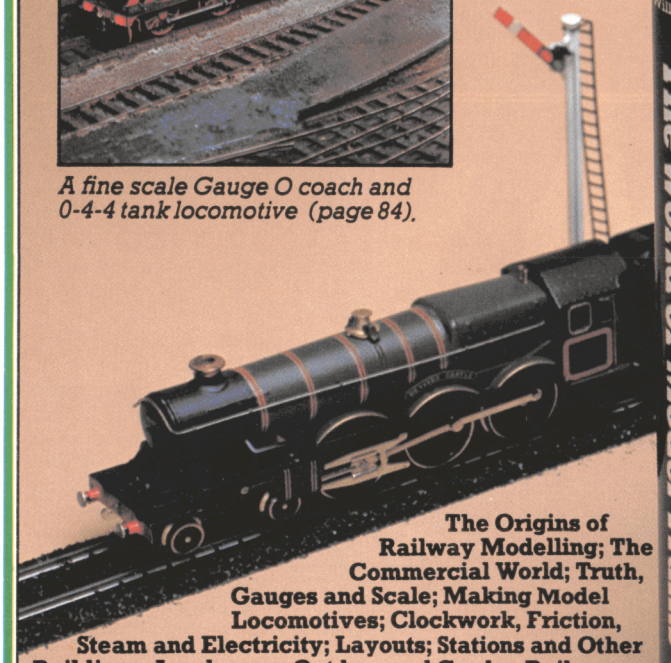

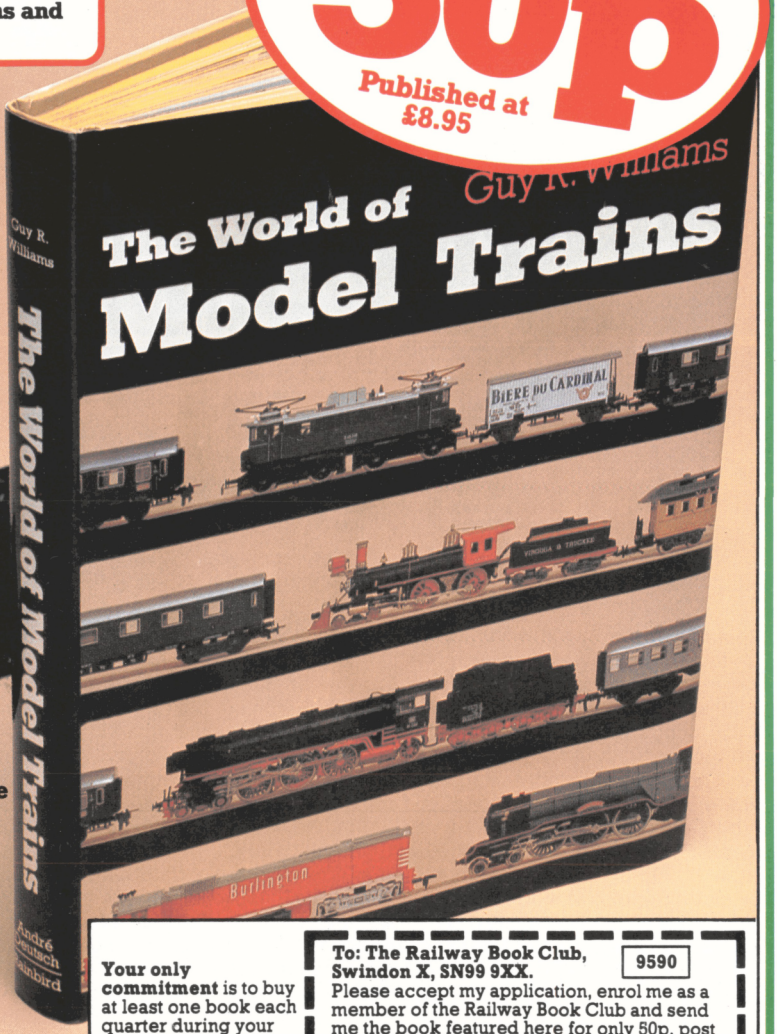

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